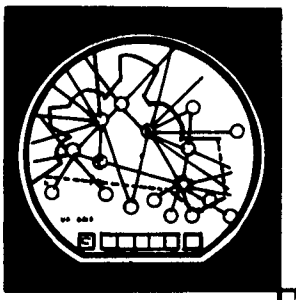
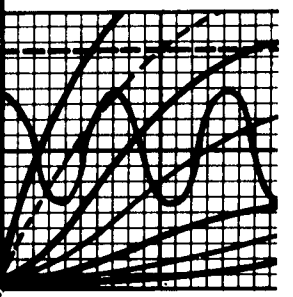
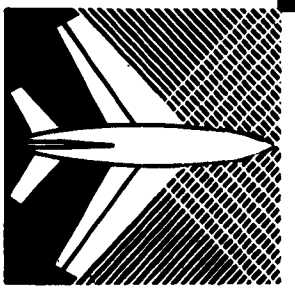






PROJECT 101-43-5S

NORTH ATLANTIC AIR TRAFFIC ANALYSIS:

AUGUST 25, 1961, FLIGHT DATA

FEBRUARY 1962

FEDERAL AVIATION AGENCY
Aviation Research & Development Service
SYSTEM MANAGEMENT DIVISION

A REPORT

NORTH ATLANTIC AIR TRAFFIC ANALYSIS: AUGUST 25, 1961, FLIGHT DATA

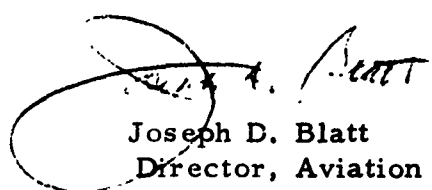
PROJECT 101-43-5S

PREPARED BY:

Richard M. Warfield

FEBRUARY 1962

This report has been approved for general distribution.



Joseph D. Blatt
Director, Aviation Research
and Development Service
Federal Aviation Agency

System Management Division
Washington 25, D. C.

System Management Division, Aviation Research and Development Service, Federal Aviation Agency, Washington, D.C.

NORTH ATLANTIC AIR TRAFFIC ANALYSIS: August 25, 1961, Flight Data, by Richard M. Warfield, February 1962, 59 pages.

ABSTRACT

This report summarizes flight data for August 25, 1961, the second of twelve monthly peak days to be analyzed in conjunction with the North Atlantic Region Traffic Survey being conducted by the United States Federal Aviation Agency. The material presented was prepared from machine tabulations of flight plan information coded into IBM cards.

A total of 417 unduplicated flights (i.e., flights counted only once regardless of the number of OACC's involved) flew somewhere within the North Atlantic Region between 0000-2359Z on August 25, 1961. Forty of these flights were airborne at 0000Z and 27 were airborne after 2359Z. In order to eliminate the overlap incurred by counting both flights airborne at the beginning as well as the end of the day, the 27 flights airborne at the end of the day were subtracted from the 417 flights to give a representative peak day total of 390 flights. Most of the tabulations in this report are in terms of these 390 flights. The distribution of these flights by ownership and aircraft class is summarized below:

	Number of Flights		
Aircraft Class	Civil	Military	Total
Piston	84	88	172
Turboprop	32	13	45
Turbojet	161	12	173
Total	277	113	390

Figure 1 illustrates traffic flow. Flights classified relative to the North Atlantic Region (12 OACC's) are summarized below:

Flight Class	Flights	Percent
Overflights	246	59
Arrivals	72	17
Departures	78	19
Within	8	2
Round Robin	13	3
Total	417	100

The peak instant for airborne activity occurred at 0424Z when 85 aircraft were simultaneously airborne. Figure 8, page 31, shows a plot of aircraft locations and approximate headings at the peak instant.

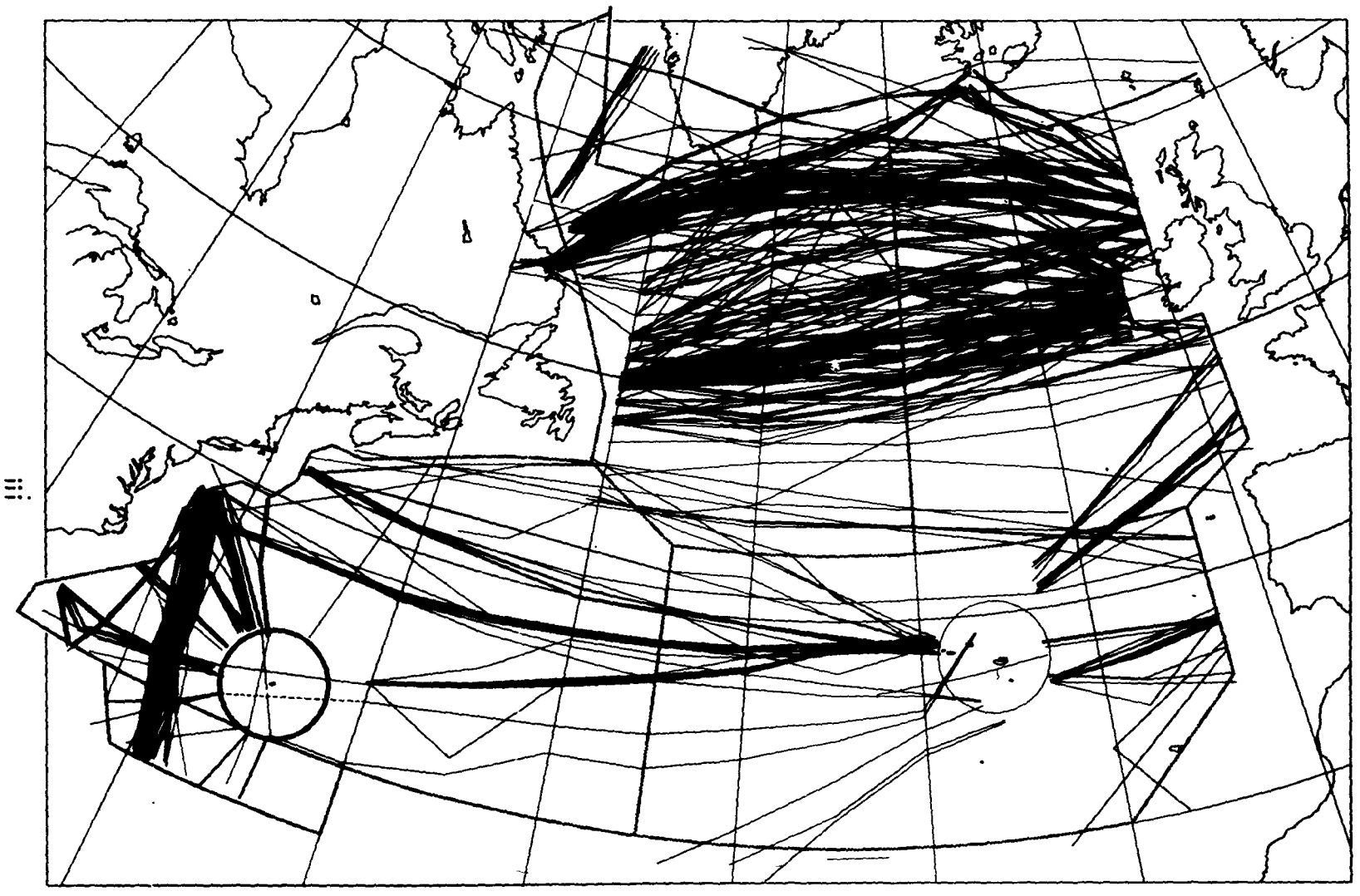


Figure 1 - Traffic Flow: Plot of all 417 flights operating in the North Atlantic Region on August 25, 1961.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

The results in this report were derived from the August 1961 traffic data collected in the North Atlantic Region Traffic Survey. This survey is being conducted by the Federal Aviation Agency as a joint project between the Air Traffic Service and the Aviation Research and Development Service. The coordination and collection of peak day flight plan data from the 12 participating Oceanic Area Control Centers is being accomplished under the direction of Cmdr. Clinton H. Mundt, USN, Air Traffic Service. Analysis of the data and preparation of forecasts of air traffic activity in the North Atlantic Region is being undertaken by the Aviation Research and Development Service.

The material presented was prepared by Mr. R. M. Warfield from machine tabulations of flight plan information which has been coded into IBM cards. A description of code interpretations and card format is included as an appendix to this report. This report is exploratory in nature in that this data and additional data as it becomes available will receive further analysis and processing. Comments and criticisms of this report and suggestions regarding future analysis are invited.

SCOPE OF ANALYSIS

Data Sources

Data on flights for the peak North Atlantic Region traffic day each month beginning with July 1961 is being collected from each of the twelve Oceanic Area Control Centers (OACC's) listed below:

1. Bermuda OACC, Bermuda Islands
2. Bodo OACC, Bodo, Norway
3. Gander OACC, Gander, Newfoundland
4. Goose OACC, Goose, Canada
5. New York OACC, New York, N. Y.
6. Prestwick OACC, Prestwick, Scotland
7. Reykjavik OACC, Reykjavik, Iceland
8. Santa Maria OACC, Santa Maria, Azores
9. Shannon OACC, Shannon, Ireland
10. Stavanger OACC, Stavanger, Norway
11. Sondrestrom OACC, Greenland
12. Thule OACC, Greenland

The traffic data in this report pertains to the August 1961 peak day flights. It was prepared largely from machine tabulations of IBM cards containing coded flight plan data for the 36-hour period, including the peak day (August 25, 1961), and six hours prior to and six hours following the peak day, reported on data collection form Number GPO 905192 (see Figure 2, page 3) for each flight in each OACC and forwarded to the United States Federal Aviation Agency for processing. A description of code interpretations and card format is included in Appendix A of this report.

Selection of August 25, 1961, as the peak day for August 1961 was made from an inspection of the daily traffic count summary of OACC activity shown in Table 1 on page 5. Daily oceanic traffic counts by civil and military flights are reported to the United States Federal Aviation Agency's Message Center, Washington, D. C., by each Oceanic Area Control Center at the end of each month. On the basis of these message reports FAA designates the peak day and each OACC fills out an individual flight data form indicated in the previous paragraph.

Figure 2 - DATA COLLECTION FORM

UNITED STATES OF AMERICA
FEDERAL AVIATION AGENCY

NORTH ATLANTIC REGION TRAFFIC SURVEY

CARD No. 1

ITEM	COLUMN
1. Month and Day	2 4
2. Recording Center	5
3. Flight or Aircraft Identification	7
4. Owner	13
5. Country of Ownership	14
6. Aircraft Type	15
7. True Air Speed	19
8. Recording Center Entrance Fix	22
9. Recording Center Entrance Fix Time (GMT)	28
10. Recording Center Entrance Fix Flight Level	32 (000 ft.)
11. Adjacent Center at Entrance	34
12. 2nd Position Report	35
13. 2nd Position Report Time (GMT)	41
14. 2nd Position Report Flight Level	45 (000 ft.)
15. 3rd Position Report	47
16. 3rd Position Report Time (GMT)	53 Z
17. 3rd Position Report Flight Level	57 (000 ft.)
18. 4th Position Report	59
19. 4th Position Report Time (GMT)	65 Z
20. 4th Position Report Flight Level	69 (000 ft.)

— NOTE —

Enter all columns left to right

Be sure all entries are sharp and legible

CARD No. 2

Card Punch Operator: Pick up items 1, 2, and 3 for identification.

ITEM	COLUMN
21. Recording Center Exit Fix	1
22. Recording Center Exit Fix Time (GMT)	7 Z
23. Recording Center Exit Fix Flight Level	11 (000 ft.)
24. Adjacent Center at Exit	13
25. Flight Origin *(Civil Aircraft Only)*	14
26. Flight Destination *(Civil Aircraft Only)*	18
27. 1st Flight Level Request	22 (000 ft.)
28. 1st Flight Level Request Coordinates	24
29. 2nd Flight Level Request	30 (000 ft.)
30. 2nd Flight Level Request Coordinates	32
31. 3rd Flight Level Request	38 (000 ft.)
32. 3rd Flight Level Request Coordinates	40
33. 4th Flight Level Request	46 (000 ft.)
34. 4th Flight Level Request Coordinates	48

Traffic Activity Measurements

This report summarizes data developed on the following measures of traffic activity:

1. Aircraft Type
2. Aircraft Ownership
3. Traffic Flow
4. True Air Speed
5. Altitude
6. Hourly Activity
7. Peak Activity
8. Meridian Crossing Latitudes
9. Time Separation

Method of Data Processing

The forms for each flight were assembled separately by stapling the forms from each OACC reporting the flight in chronological order. The forms were then edited for consistency and completeness and each flight recoded onto a worksheet and subsequently punched into IBM cards. A copy of the worksheet and a description of the code interpretations and IBM card format are included in Appendix A, page 48.

Deficiencies and Limitations

The matching of flight forms from different OACC's presented some difficulties. Careful processing and editing of forms did not entirely eliminate ambiguity since the 36-hour reporting period overlaps three days and many flight identifications are repeated on a daily basis so that the exact date a flight occurred was in doubt in some cases. Participating OACC's have been requested to enter the day of month in Item 1 of reporting form strictly consistent with the entrance recording center fix time (GMT) of Item 9 to minimize future trouble. On the whole, the quality and legibility of the reporting was excellent. This report does not contain airspace reservation data.

FEDERAL AVIATION AGENCY

Table 1 - NORTH ATLANTIC REGION TRAFFIC SURVEY—MONTHLY SUMMARY—DAILY FLIGHTS

MONTH AND YEAR: August, 1963

PEAK DAY SELECTED: Friday, August 23, 1963

OCEANIC CENTER	Day	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	PEAK DAY		CENTER MONTHLY TOTAL	
	Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Date	Flights		
GOOSE	C→	46	65	67	66	69	55	32	25	14	27	18	37	25	39	19	12	34	35	25	30	27	30	44	50	70	63	58	46	41	32	24	8/30/63	66	1224	C
	←A	0	6	11	14	6	5	1	2	2	8	6	0	0	0	2	8	3	12	6	3	3	4	6	9	5	4	12	11	7	15	11		14	182	M
	Tot	46	71	78	80	75	60	32	27	16	35	24	37	25	39	21	20	37	47	31	33	30	34	50	59	75	67	70	57	48	47	35		80	1406	T
GANDER	C→	137	137	132	109	117	144	143	135	122	150	146	164	160	154	140	142	146	150	166	160	146	127	133	112	126	142	141	149	150	144	160	8/23/63	160	4394	C
	←A	38	50	43	34	35	31	25	34	50	41	42	23	37	35	43	63	35	47	27	22	23	57	44	46	37	28	33	23	42	44	55		55	1179	M
	Tot	169	187	175	143	152	175	168	169	172	192	188	187	197	189	183	205	181	197	193	182	169	184	157	158	163	170	172	172	192	188	215		215	5573	T
SEYMOUR	C→	34	49	63	77	81	67	45	34	26	26	34	30	24	29	24	35	29	46	45	29	32	42	54	52	74	81	71	46	44	41	33	8/25/63	74	1397	C
	←A	10	14	13	13	12	14	18	11	11	14	11	8	10	9	16	14	9	21	13	11	15	17	12	14	20	11	12	16	13	9	10		20	401	M
	Tot	44	63	76	90	93	81	63	45	37	40	45	38	34	38	40	49	38	67	58	40	47	59	66	66	94	92	83	62	57	50	43		94	1798	T
BONDESTROM	C→	45	53	71	106	92	62	60	63	25	50	56	68	54	66	60	26	9	59	68	50	90	103	108	121	124	127	82	86	69	74	24	8/25/63	124	2151	C
	←A	53	74	57	49	26	53	55	62	56	44	52	42	81	36	58	5	52	60	40	33	39	69	63	45	51	44	65	45	84	76	67		51	1635	M
	Tot	98	127	128	155	118	115	115	125	81	94	108	109	135	102	118	31	61	119	108	83	129	172	171	166	175	171	147	131	153	150	91		175	3786	T
STAVANGER	C→	0	2	4	4	2	2	3	3	5	4	2	4	1	3	5	1	4	0	0	0	4	0	6	1	2	0	5	2	3	2	7	8/31/63	3	81	C
	←A	0	0	0	1	0	0	5	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0		5	10	M
	Tot	0	2	4	5	2	2	8	4	5	4	3	4	1	3	5	1	4	0	0	0	5	0	6	1	2	0	5	3	3	2	7		8	91	T
PRESTWICK	C→	144	147	153	149	174	153	154	144	134	153	160	178	161	161	139	154	166	157	162	179	157	138	148	159	162	179	164	178	159	158	170	8/28/63	178	4894	C
	←A	39	46	42	39	21	27	27	49	50	39	45	32	30	42	40	57	43	51	31	23	52	50	54	43	48	24	31	42	42	55	45		42	1259	M
	Tot	183	193	195	188	195	180	181	193	184	192	205	210	191	203	179	211	209	208	193	202	209	188	202	202	210	203	195	220	201	213	215		220	6153	T
BERMUDA	C→	19	31	23	26	34	32	23	22	17	18	26	26	28	16	17	19	18	29	25	35	19	18	23	17	34	27	34	23	24	21	16	8/28/63	31	730	C
	←A	26	62	52	47	29	29	39	44	47	35	56	32	40	39	49	46	38	46	33	16	12	24	28	47	49	37	37	29	32	42	34		62	1176	M
	Tot	45	93	75	73	63	61	62	66	64	53	82	58	68	55	66	65	56	75	58	51	31	42	51	64	83	64	71	52	56	63	50		93	1906	T
SHANNON	C→	152	145	146	156	167	171	137	151	133	157	135	188	166	144	145	146	150	156	168	159	158	136	150	153	155	174	170	169	145	161	176	8/23/63	176	4818	C
	←A	40	43	35	45	25	25	25	35	40	30	35	25	35	37	37	34	38	48	29	22	43	53	28	45	37	19	34	27	35	38	46		46	1088	M
	Tot	192	188	181	201	192	196	162	186	173	187	170	213	201	181	182	180	188	204	197	181	201	189	178	198	192	193	204	196	180	199	222		222	5906	T
NEW YORK	C→	108	66	46	78	96	86	68	68	51	79	87	101	111	70	85	60	85	79	106	128	98	83	81	91	79	99	105	68	81	82	59	8/25/63	106	2578	C
	←A	85	93	95	71	65	63	71	109	79	80	97	71	77	92	110	109	106	71	94	50	73	79	86	101	82	100	68	77	87	106	67		94	2620	M
	Tot	187	159	141	149	161	149	139	177	130	159	184	172	188	162	195	169	191	150	200	184	171	162	167	192	161	199	173	145	168	188	126		200	5198	T
THULE	C→	6	4	1	2	3	2	1	4	4	1	0	3	2	1	3	3	2	1	3	1	1	2	4	1	3	3	1	3	3	4	1	8/5/63	3	73	C
	←A	3	0	13	17	18	19	12	11	8	12	9	8	6	2	10	10	5	3	8	4	7	9	6	4	5	7	6	4	7	13	8		18	254	M
	Tot	9	4	14	19	21	21	13	15	12	13	9	11	8	3	13	13	7	4	11	5	8	11	10	5	8	10	7	7	10	17	9		21	327	T
GOOSE	C→	3	3	2	1	1	3	3	2	3	2	2	3	3	1	1	4	2	1	1	1	2	1	3	2	1	2	4	1	1	4	1	8/1/63	3	63	C
	←A	0	0	0	1	0	0	4	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		4	7	M
	Tot	3	3	2	2	1	3	7	3	3	2	2	3	3	1	1	4	2	1	1	1	2	1	3	2	1	2	4	1	1	4	1		7	70	T
SANTA MARIA	C→	17	22	7	28	18	25	12	15	23	23	24	14	25	11	15	22	25	19	21	27	12	24	34	27	22	16	24	24	20	25	19	8/16/63	22	633	C
	←A	50	71	78	63	38	38	45	52	66	52	89	48	78	81	92	107	91	68	64	55	56	79	79	69	53	43	32	30	77	76	77		107	1997	M
	Tot	67	93	85	83	57	63	57	67	89	75	113	62	103	92	106	129	116	87	85	82	68	103	113	96	75	59	56	54	97	101	96		129	2630	T
	C→																																			C
	←A																																			M
	Tot																																			T
	C→																																			C
	←A																																			M
	Tot																																			T
TOTAL	C→	704	723	715	796	884	808	680	666	557	690	689	814	760	695	653	624	670	738	790	799	746	704	768	786	852	913	859	795	730	748	690	8/25/63	852	23036	C
	←A	316	443	418	358	276	304	327	413	408	354	444	289	394	373	466	463	420	427	345	245	324	443	406	423	387	337	328	305	426	474	420	8/25/63	387	11808	M
	Tot	1020	1166	1133	1154	1160	1112	1007	1079	965	1044	1133	1103	1154	1068	1119	1087	1090	1165	1135	1044	1070	1147	1174	1209	1239	1250	1187	1100	1156	1222	1110	8/25/63	1239	34844	T

TRAFFIC DATA

OACC Data Forms Received

The following is a summary of the number of forms received from each participating Oceanic Area Control Center:

OACC	Number of Forms Received for each Day		
	24 Aug 61	25 Aug 61	26 Aug 61
Bermuda	17	78	13
Bodo	-	1	-
Gander	35	157	82
Goose	-	99	19
New York	34	129	31
Prestwich	41	190	27
Reykjavik	23	94	27
Santa Maria	20	62	23
Shannon	51	189	63
Stavanger	1	2	-
Sondrestrom	15	53	15
Thule	1	9	1
Total	238	1,063	301

Peak Day Flights

The data reported by each OACC covers a 36-hour period. This provides a six hour overlap on each end of the peak day which provides flight history on flights in the North Atlantic Region at the beginning and end of the peak day. A summary of flights entering and exiting the North Atlantic Region relative to August 25, 1961, is shown below:

Entrance Flights	Exit Flights		
	During	After	Total
Before	40	-	40
During	350	27	377
Total	390	27	417

In this report, the 390 exit flights were used as representative of a peak day. This was done to eliminate the overlap incurred by counting both flights in the area at the beginning as well as flights in the area at the end of the day. If the entrance flights (377 in this case) had been larger than exit flights it would have been used to represent the peak day.

Country of Ownership

Table 2, page 8, shows the distribution by country, civil or military ownership and aircraft class.

Aircraft Types

Aircraft types for the peak day are summarized by aircraft and ownership class in Table 3, page 9.

Table 2 - COUNTRY OF OWNERSHIP: Distribution by Country of Ownership and Aircraft Class for Flights in the North Atlantic Region on August 25, 1961

Country	Piston			Turboprop			Turbojet			Total	Total	Grand
	Civ	Mil	Total	Civ	Mil	Total	Civ	Mil	Total	Civ	Mil	Total
United States	49	87	136	2	13	15	64	10	74	115	110	225
United Kingdom	2	1	3	21	0	21	20	2	22	43	3	46
Netherlands	9	0	9	0	0	0	10	0	10	19	0	19
Canada	4	0	4	4	0	4	7	0	7	15	0	15
France	0	0	0	0	0	0	13	0	13	13	0	13
Iceland	8	0	8	2	0	2	0	0	0	10	0	10
Italy	3	0	3	0	0	0	6	0	6	9	0	9
Germany	3	0	3	0	0	0	5	0	5	8	0	8
Ireland	0	0	0	0	0	0	5	0	5	5	0	5
Switzerland	0	0	0	0	0	0	5	0	5	5	0	5
Belgium	1	0	1	0	0	0	3	0	3	4	0	4
Denmark	0	0	0	0	0	0	4	0	4	4	0	4
Mexico	0	0	0	0	0	0	4	0	4	4	0	4
Norway	0	0	0	0	0	0	4	0	4	4	0	4
Spain	4	0	4	0	0	0	0	0	0	4	0	4
Venezula	0	0	0	0	0	0	3	0	3	3	0	3
Israel	0	0	0	1	0	1	1	0	1	2	0	2
India	0	0	0	0	0	0	2	0	2	2	0	2
Sweden	1	0	1	0	0	0	1	0	1	2	0	2
Argentia	0	0	0	1	0	1	0	0	0	1	0	1
Australia	0	0	0	0	0	0	1	0	1	1	0	1
Brazil	0	0	0	0	0	0	1	0	1	1	0	1
Cuba	0	0	0	1	0	1	0	0	0	1	0	1
Japan	0	0	0	0	0	0	1	0	1	1	0	1
Pakistan	0	0	0	0	0	0	1	0	1	1	0	1
Total	84	88	172	32	13	45	161	12	173	277	113	390

Table 3 - AIRCRAFT TYPE: Distribution by Aircraft Class and Type by Ownership for Flights in the North Atlantic Region on August 25, 1961

SUMMARY

Aircraft Class	Ownership Class		
	Civil	Military	Total
Piston	84	88	172
Turboprop	32	13	45
Turbojet	161	12	173
Total	277	113	390

Piston

Civil	Flights
C45	1
DC3	2
DC4	6
DC6B	10
DC6	12
DC7B	4
DC7C	11
DC7	12
LO49	23
L649	3
Total	84

Mil.	Flights
B50	1
C118	25
C119	2
C121	10
C123	1
C124	15
C131	3
C54	4
C97	4
HAST	1
KC97	3
P2V	1
P5M	1
R4D	1
R5D	1
R7V	1
T29	2
UF2	1
WVZ	11
Total	88

Turboprop

Civil	Flights
BRTA	27
CL	1
V170	2
V180	2
Total	32

Mil.	Flights
C133	13

Turbojet

Civil	Flights
B707	88
B720	3
DC8	66
DH04	4
Total	161

Mil.	Flights
B47	9
B66	1
MJB	1
VCTR	1
Total	12

Traffic Flow

Flights have been analyzed in terms of the following considerations:

Flight Position Reports
Flight Direction
Origin/Destination Combinations
Meridian Crossings

Flight Position Reports

A flight consists of one takeoff and one landing (i.e., a flight making an intermediate stop at the Azores on its way between Europe and North America is counted as two flights). The summary below shows the classification of flights relative to their takeoff and landing airports:

Flight Class	Flights		Location of Airport Relative to the North Atlantic Region (12 OACC's)	
	Number	Percent	Takeoff Airport	Landing Airport
Overflights	246	59	Outside	Outside
Arrivals	72	17	Outside	Within
Departures	78	19	Within	Outside
Withins	8	2	Within	Within
Round Robin (RR)	13	3	Within	Same as Takeoff
Total	417	100		

The reporting fixes for each flight were recorded in terms of latitude and longitude. A plot of the 417 flights which operated in the North Atlantic Region on August 25, 1961, is shown by Figure 1, page iii. Flow is depicted by joining reporting fixes by straight line plots.

Flight Direction

Flight direction for any particular segment of flight may be calculated from reporting fix information, however, for a broad view of traffic flow relative to the North Atlantic Region the following directional classifications were used:

Takeoff Airport	Landing Airport: Azores	Bermuda	Europe	Greenland	Iceland	No. Amer.	So. Amer.
Azores	RR	West	East	North	North	West	West
Bermuda	East	RR	East	North	North	West	South
Europe 1/	West	West	RR	West	West	West	West
Greenland	South	South	East	RR	East	West	South
Iceland	South	South	East	West	RR	West	South
No. Amer. 2/	East	East	East	East	East	RR	South
So. Amer. 3/	East	North	East	North	North	North	RR

1/ Including North Africa
2/ Including U.S., Canada, Alaska and Newfoundland
3/ Including Caribbean Island and Latin America

A summary of the directional classifications for the flights in the North Atlantic Region on August 25, 1961, is shown below:

Flight Direction	Flights: Number	Percent
Eastbound	146	35
Westbound	198	47
Northbound	28	7
Southbound	32	8
Round Robin	13	3
Total	417	100

Figure 3, page 12, shows a plot of Eastbound and Southbound flights; Figure 4, page 13, shows a similar plot for Westbound and Northbound flights.

Origin/Destination Combinations

Table 4, page 14, lists the origin (takeoff) and destination (landing) airports for the 417 flights which operated in the North Atlantic Region on August 25, 1961.

Meridian Crossings

The eastbound and westbound traffic flow across the 20° W, 30° W, 40° W and 50° W longitude meridians has been analyzed in some detail. The method of analysis and results are contained in pages 32-47, inclusive.

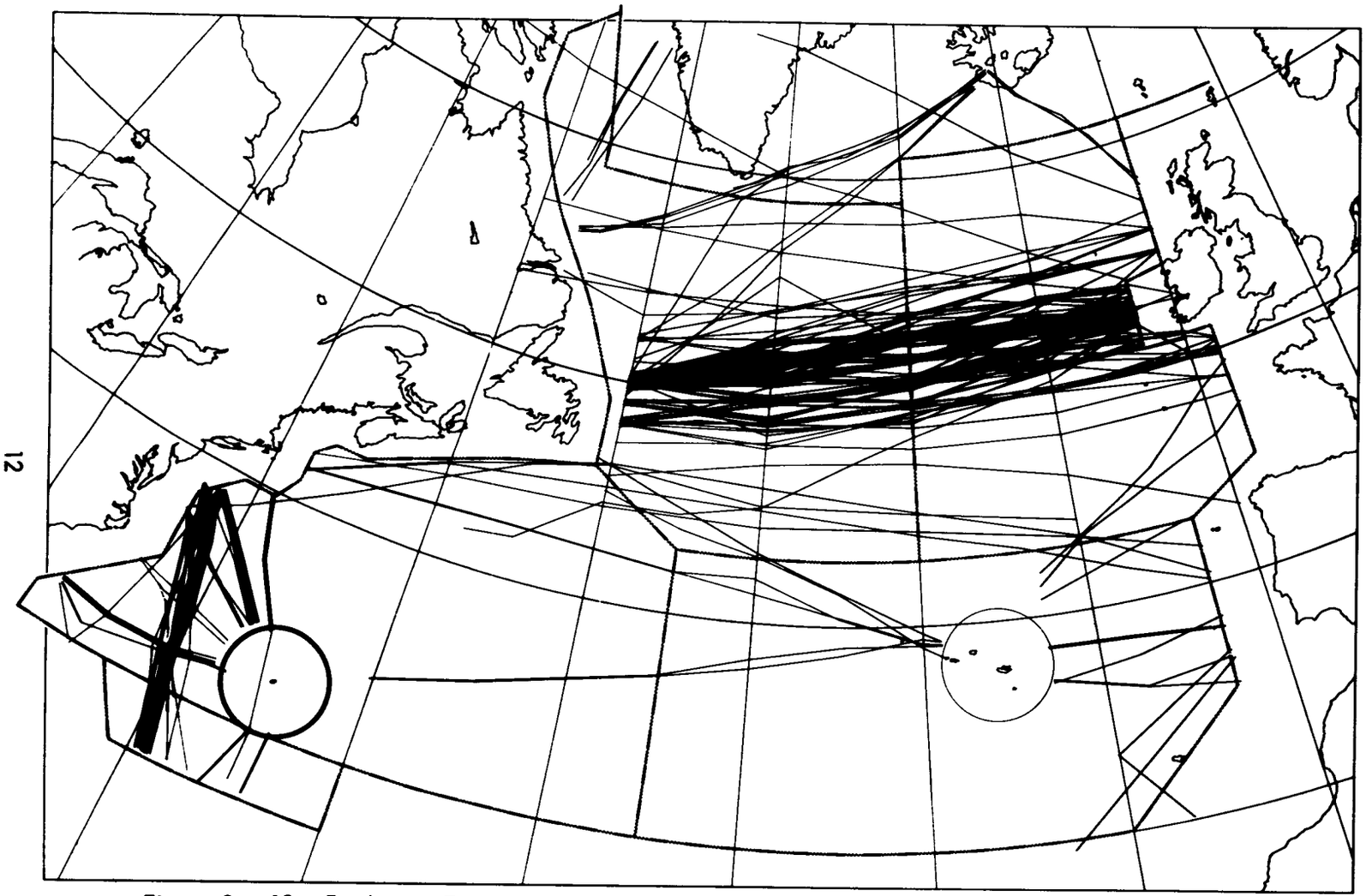


Figure 3 p.12 - Eastbound Traffic Flow: Plot of 146 Eastbound and 32 Southbound flights operating in the North Atlantic Region on August 25, 1961.

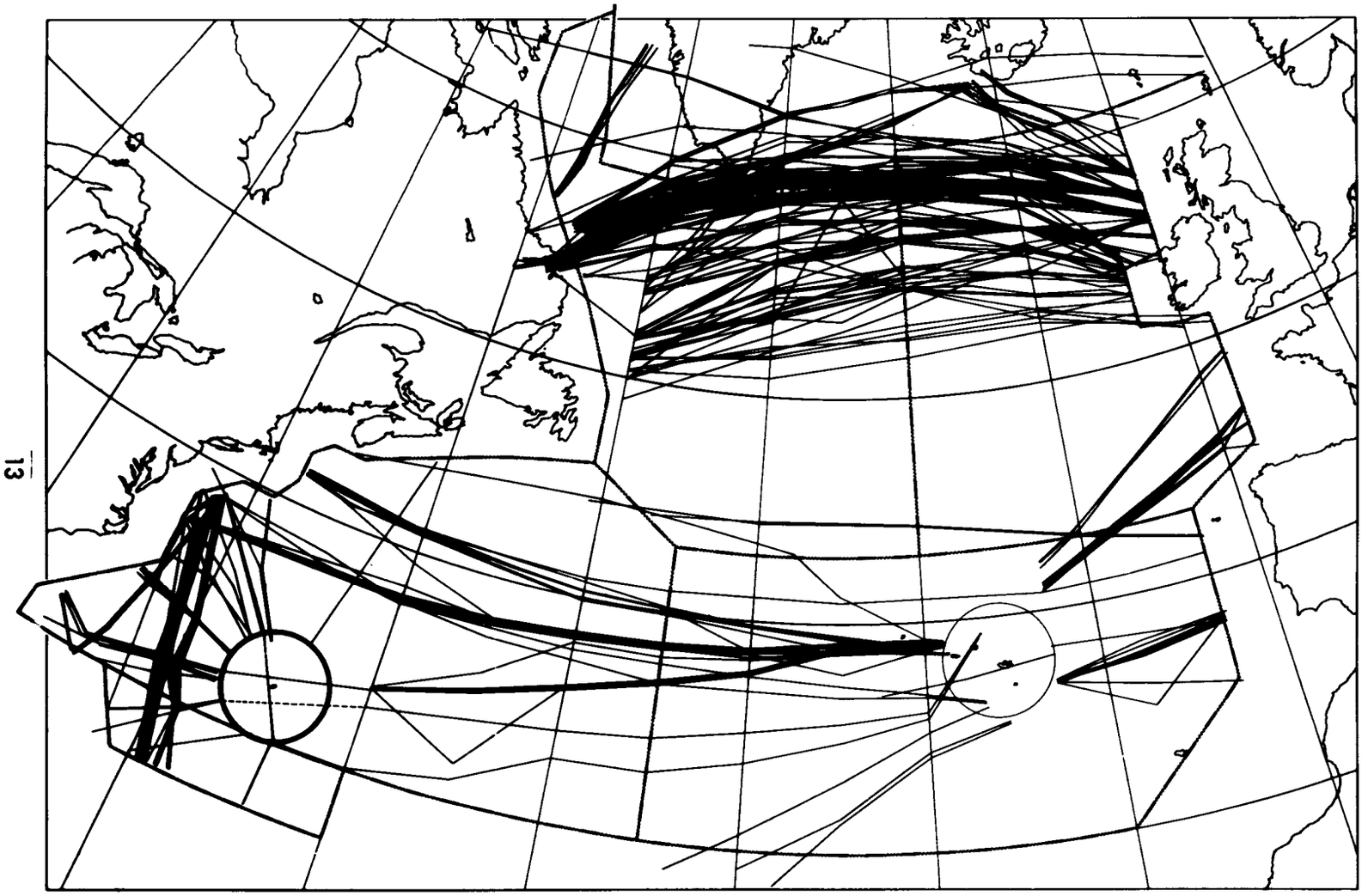


Figure 4 p.13 - Westbound Traffic Flow: Plot of 198 Westbound and 28 Northbound flights operating in the North Atlantic Region on August 25, 1961.

Table 4 - TRAFFIC FLOW: Origin/Destination Combinations by Aircraft Operating in and through Oceanic Centers of the North Atlantic Region on August 25, 1961

Location Identifier * Orig./Dest.	Flights Civil	Mil.	Total
BGSF-BGSF	2	1	3
" CYQX	1		1
" EHAM	1		1
" EKCH	1		1
" KDOV		1	1
" KFMH		1	1
" KLAX	1		1
	6	3	9
BGTL-BGSF		1	1
" CYYR		1	1
		2	2
BIKF-BIKF		6	6
" CYAR		1	1
" CYQX	1		1
" CYUL	2		2
" CYYR		1	1
" KIDL	1		1
	4	8	12
BIRK-EGLL	1		1
" EGPF	1		1
" ELLX	1		1
	3		3
CYAR-BIKF		2	2
" LPLA		1	1
		3	3
CYEG-BGSF	1		1
	1		1
CYFB-EGLL	1		1
	1		1
CYHZ-LKPR	1		1
	1		1

Location Identifier * Orig./Dest.	Flights Civil	Mil.	Total
CYJT-BIKF		1	1
" EDAF		1	1
" EGPK		3	3
" LFPO		2	2
" MXKF	1		1
	1	7	8
CYQX-EDDF	1		1
	1		1
CYQY-EINN	1		1
	1		1
CYUL-EDDF	1		1
" EGLL	1		1
" EGPK	3		3
" EHAM	1		1
" LFPO	1		1
" LIMC	1		1
" LPAZ	1		1
	9		9
CYYQ-BGTL		1	1
		1	1
CYYR-BGSF		2	2
" BGTL		2	2
" BIKF	1		1
" BIRK	3		3
" EGXJ		1	1
" EHAM	1		1
	5	5	10
CYYZ-EGLL	1		1
	1		1
EBBR-CYUL	1		1
" KIDL	1		1
	2		2

Table 4 - TRAFFIC FLOW: (continued)

Location Identifier * Orig./Dest.	Flights Civil	Mil.	Total
EDAF-LPLA		3	3
		3	3
EDAR-LPLA		1	1
		1	1
EDDF-KBOS	1		1
" KIDL	2		2
" KWRI	1		1
	4		4
EDDK-KIDL	1		1
	1		1
EGCC-CYUL	1		1
	1		1
EGLL-BIKF	1		1
" BIRK	1		1
" CYUL	3		3
" CYWG	1		1
" CYYR	1		1
" KBOS	3		3
" KIDL	9		9
" KPHL	1		1
	20		20
EGOA-EGOA		1	1
		1	1
EGPF-BIRK	1		1
	1		1
EGPK-BIKF	2		2
" CYAR		1	1
" CYJT		4	4
" CYUL	3		3
" CYWG	1		1
" CYYT		1	1
" CYYZ	1		1
EGPK-KBOS	1		1
" KDTW	1		1
" KIDL	3		3
	12	6	18
EGUA-KLNK		1	1
		1	1
EGUN-LPLA		3	3
		3	3
EGVA-KLKC		2	2
		2	2
EGVI-KLCK		2	2
		2	2
EGVN-BIKF		1	1
" KPSM		1	1
		2	2
EGYM-EGYM		1	1
		1	1
EHAM-BGSF	1		1
" BIKF	1		1
" CYUL	3		3
" KBOS	1		1
" KIDL	2		2
	8		8
EINN-CYQM	2		2
" CYQX	7		7
" CYUL	2		2
" CYYR	3		3
" KDTW	1		1
" KIDL	11		11
" KWRI	1		1
	27		27

Table 4 - TRAFFIC FLOW: (continued)

Location Identifier * Orig./Dest.	Flights Civil	Mil.	Total
EKCH-BGSF	1		1
" CYHZ	1		1
" KIDL	1		1
" PAFB	1		1
	4		4
ENGM-KIDL	1		1
	1		1
KBAL-EGLL	1		1
" MJSJ	1		1
	2		2
KBOS-EGPK	1		1
" EINN	1		1
" MXKF	1		1
	3		3
KCHS-MXKF	2		2
	2		2
KDCA-EGLL	1		1
" MXKF	1		1
	2		2
KDOV-LETO		1	1
" LFOU		2	2
		3	3
KDTW-EGLL	1		1
" EINN	1		1
	2		2
KFMH-BGSF		1	1
		1	1
KIDL-EBBR	2		2
" EDDF	1		1
" EDDK	1		1
" EGKK	1		1

Location Identifier * Orig./Dest.	Flights Civil	Mil.	Total
KIDL-EGLL	14		14
" EGPK	4		4
" EHAM	3		3
" EIDW	1		1
" EINN	7		7
" EKCH	1		1
" LEMD	1		1
" LFPO	9		9
" LIMC	2		2
" LIRF	2		2
" LPPT	2		2
" LSGG	1		1
" LSZZ	1		1
" MACC	1		1
" MJSJ	13		13
" MKPB	1		1
" MKPP	1		1
" MVMI	1		1
" MXKF	6		6
" MYNN	1		1
" SBGL	1		1
	78		78
KILG-EINN	1		1
	1		1
KLAX-BGSF	1		1
" EGLL	2		2
	3		3
KMHT-MJBQ		1	1
		1	1
KMIA-MXKF	1		1
	1		1
KORD-EDDF	1		1
	1		1
KPBG-LEMO		1	1
		1	1

Table 4 - TRAFFIC FLOW: (continued)

Location Identifier * Orig./Dest.	Flights Civil	Mil.	Total
KWRI-EDDF	2		2
" EINN	3		3
" LPLA		2	2
	5	2	7
LEMD-KIDL	1		1
" LPAZ	2		2
	3		3
LEMO-KLNK		1	1
		1	1
LETO-KPSM		1	1
" LPLA		1	1
		2	2
LFOU-CYJT		1	1
" LPLA		4	4
		5	5
LFPB-CYQX	1		1
	1		1
LFPO-CYQX	1		1
" CYUL	3		3
" KBOS	1		1
" KIDL	5		5
" PANC	1		1
	11		11
LPAZ-DCLP	1		1
" KIDL	2		2
" KMIA	1		1
" KPHL	1		1
" LPPT	1		1
" MJSJ	2		2
" MVMI	1		1
" MXKF	1	1	2
	10	1	11

Location Identifier * Orig./Dest.	Flights Civil	Mil.	Total
LPLA-DMMP		1	1
" EDAB		1	1
" EGVN		1	1
" KDOV		8	8
" KGRE		1	1
" KIDL	1		1
" KLCK		1	1
" KNGU		1	1
" KWRI		3	3
" LEMO		1	1
" LETO		3	3
" MXKF		3	3
	1	24	25
LPPT-LPAZ	6		6
	6		6
LSGG-KIDL	1		1
	1		1
MACC-KIDL	1		1
" LPPT	1		1
	2		2
MDCT-KIDL	1		1
	1		1
MJSJ-KIDL	12		12
" KPHL	1		1
	13		13
MKJM-KIDL	1		1
	1		1
MKPA-MXKF	1		1
	1		1
MKPP-KIDL	1		1
	1		1

Table 4 - TRAFFIC FLOW: (continued)

Location Identifier * Orig./Dest.	Flights Civil	Mil.	Total
MOOY-KXKF	1		1
	1		1
MVMI-KIDL	2		2
" LPPT	1		1
	3		3
MXKF-CYUL	1		1
" KBAD		1	1
" KBOS	1	1	2
" KCHS		1	1
" KCOF		3	3
" KDCA	1		1
" KFMH		1	1
" KIDL	9		9
" KLFI		1	1
" KMIA	1		1
" KNGU		2	2
" KNSF		1	1
" LPLA	1	1	2
" MJNR		2	2
" MKPA	1		1
" MKPP	1		1
" MXKF		1	1
" -----		1	1
	16	16	32
MYNN-KIDL	2		2
	2		2
PANC-EDDM	1		1
" EHAM	1		1
	2		2
---- - MXKF		11	11
---- - ----		6	6
		17	17

Location Identifier * Orig./Dest.	Flights Civil	Mil.	Total
(Omitted from page 1)			
DMMN-LPLA		1	1
		1	1
GRAND TOTAL	291	126	417

* Location Identifiers consistent with ICAO Document 7910.

True Air Speed

Table 5, and Figure 5, pages 20 and 21, show the distribution of true air speed (knots) by aircraft class and owner for flights in the North Atlantic Region on August 25, 1961. Speeds are those reported by the first oceanic area control center to exercise control over the flight.

True Air Speed/Altitude Relationship

Table 6, page 22, shows a joint plot of the true air speed and assigned flight level relationship taken at the 20° W, 30° W, 40° W and 50° W longitude meridians.

Table 5 - TRUE AIRSPEED: Distribution of Cruise Speeds (TAS-Knots) by Aircraft Class and Owner for Flights in the North Atlantic Region on August 25, 1961

TAS (knots)	Piston			Turboprop			Turbojet			Total	Total	Grand
	Civ	Mil	Total	Civ	Mil	Total	Civ	Mil	Total	Civ	Mil	Total
150-159	0	2	2	0	0	0	0	0	0	0	2	2
160-169	2	1	3	0	0	0	0	0	0	2	1	3
170-179	4	8	12	0	0	0	0	0	0	4	8	12
180-189	2	6	8	0	0	0	0	0	0	2	6	8
190-199	1	8	9	0	0	0	0	0	0	1	8	9
200-209	0	19	19	0	0	0	0	0	0	0	19	19
210-219	0	4	4	0	0	0	0	0	0	0	4	4
220-229	6	17	23	1	0	1	0	0	0	7	17	24
230-239	17	7	24	1	0	1	0	0	0	18	7	25
240-249	19	15	34	0	0	0	0	0	0	19	15	34
250-259	11	1	12	0	0	0	0	0	0	11	1	12
260-269	12	0	12	0	13	13	0	0	0	12	13	25
270-279	8	0	8	2	0	2	0	0	0	10	0	10
280-289	2	0	2	0	0	0	0	0	0	2	0	2
290-299	0	0	0	2	0	2	0	0	0	2	0	2
300-309	0	0	0	1	0	1	0	0	0	1	0	1
310-319	0	0	0	11	0	11	0	0	0	11	0	11
320-329	0	0	0	9	0	9	0	0	0	9	0	9
330-339	0	0	0	4	0	4	0	0	0	4	0	4
340-349	0	0	0	1	0	1	0	0	0	1	0	1
350-359	0	0	0	0	0	0	0	0	0	0	0	0
360-369	0	0	0	0	0	0	0	0	0	0	0	0
370-379	0	0	0	0	0	0	0	0	0	0	0	0
380-389	0	0	0	0	0	0	0	0	0	0	0	0
390-399	0	0	0	0	0	0	0	0	0	0	0	0
400-409	0	0	0	0	0	0	0	0	0	0	0	0
410-419	0	0	0	0	0	0	0	0	0	0	0	0
420-429	0	0	0	0	0	0	2	3	5	2	3	5
430-439	0	0	0	0	0	0	2	6	8	2	6	8
440-449	0	0	0	0	0	0	2	0	2	2	0	2
450-459	0	0	0	0	0	0	6	2	8	6	2	8
460-469	0	0	0	0	0	0	26	0	26	26	0	26
470-479	0	0	0	0	0	0	47	0	47	47	0	47
480-489	0	0	0	0	0	0	55	0	55	55	0	55
490-499	0	0	0	0	0	0	19	1	20	19	1	20
500-509	0	0	0	0	0	0	1	0	1	1	0	1
510-519	0	0	0	0	0	0	1	0	1	1	0	1
Total	84	88	172	32	13	45	161	12	173	277	113	390

Figure 5 - TRUE AIR SPEED: Distribution of Speeds by Aircraft Class for Flights in the North Atlantic Region on August 25, 1961

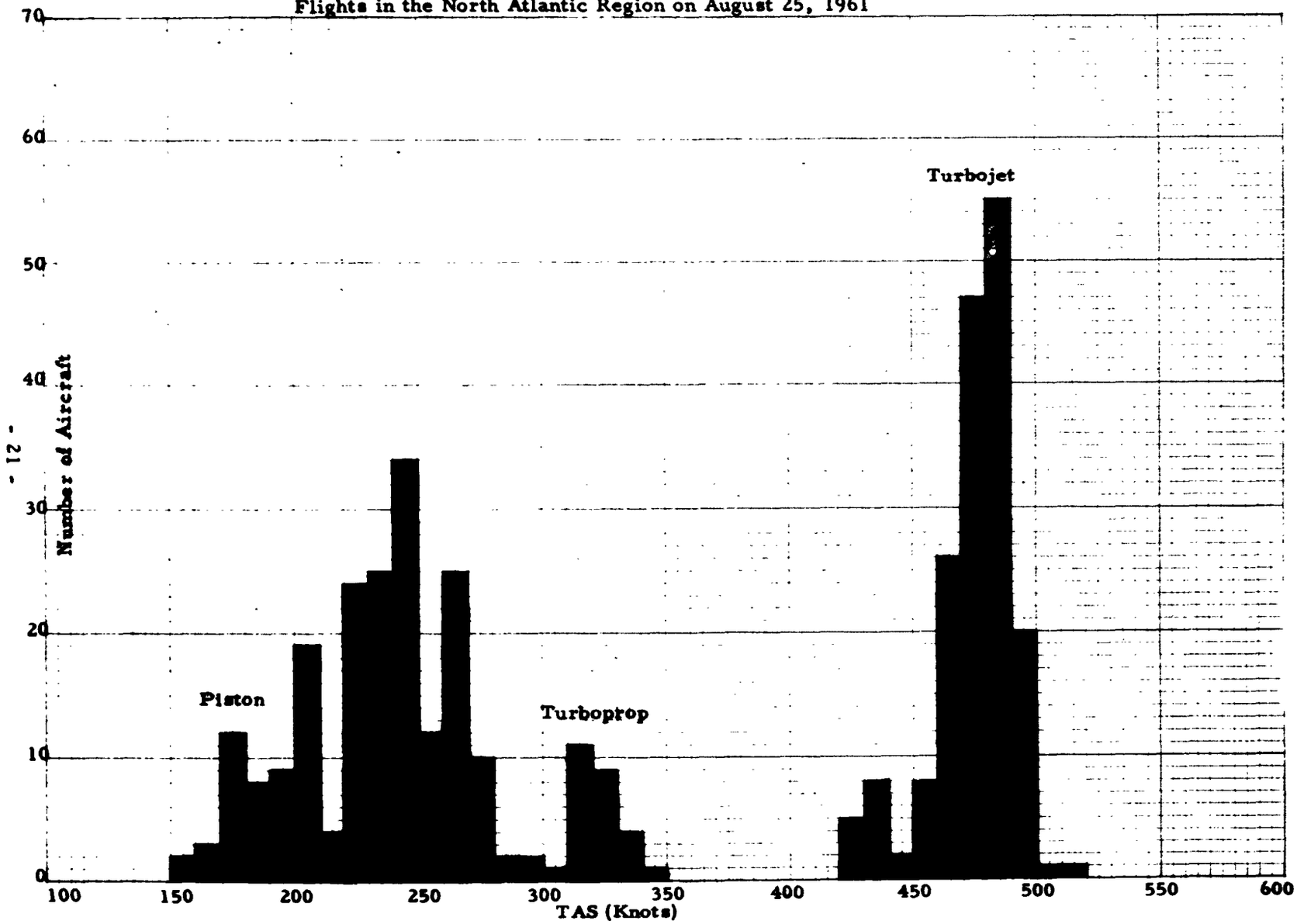


Table 6 - TRUE AIRSPEED/ALTITUDE RELATIONSHIP: Joint Distributions of True Airspeed and Assigned Flight Level for Flights in the North Atlantic Region on August 25, 1961. (Counts made at the 20° W, 30° W, 40° W and 50° W Meridians for flights crossing between 45° N and 65° N Latitude)

TAS (knots)	Flight Level (1,000's ft.)																																				All Levels
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
150-159				3	3		2																																8
160-169	4				3	3																																	10
170-179				3	24	7	10																																44
180-189					8	9	3	4		3	2				2																								31
190-199		6	8			9								3																								26
200-209					90	21	12	2	1			3																											129
210-219						3	8		4	3																													18
220-229			7	1	13	19	35	26	7	11	11	5		22																								157
230-239			3	4	9		23	18	33	4	8	12	24	9																								147
240-249					3	1	22	13	47	36	6	8	25	41	6	4																							212
250-259							7		23	3	16	12			3	3	5		1																				73
260-269							11	3		12	19	10	20	12	31	4	16	3	10	5	6																		162
270-279					1		5		1	6	6	9		5	4	21	4	5	2																				69
280-289																5	5																						10
290-299																	2				3		1																6
300-309																3	1	4			4																		12
310-319											1		9	5	6	2	9	11	5	1	3			2														54
320-329																6	15	7	8	4	6																	46
330-339															2	3	3	6	5	4			1			3												27
340-349																																3						3
350-359																																						
360-369																																1						1
370-379																																						
380-389																																						
390-399																																						
400-409																																						
410-419																																						
420-429																									5	5		5		4		3		1					23
430-439																							2		2		1	12		13		5				2			37
440-449																										1				2		4				2			9
450-459										1														1	5			2		1		19		9		6		2	46
460-469																									6			32	2	22		36		35		4		4	141
470-479																									3	6		59		87	4	43		56	1	16		2	277
480-489																	1							11	11	32		33		66		80		39		16			289
490-499																							3	4	9	8		23		7	2	14					6	76
500-509																												3										3
510-519																									3													3
All TAS's	4	6	18	11	154	72	138	66	116	79	69	59	78	97	54	51	61	36	31	14	22	-	7	18	44	55	1	169	2	202	6	208	-	140	1	46	-	14	2,149

Altitude

Table 7 and Figure 6, pages 24 and 25, show the distribution of assigned flight levels (at entry fixes) for flights in the North Atlantic Region on August 25, 1961, by aircraft and ownership class.

Altitude Changes

Altitude changes between reporting fixes (flight leg) are summarized below:

Type of Change	Flight Legs *		Number of Levels Changed							
	Number	Percent	1	2	3	4	5	6	7	8
Climb	136	8	33	79	5	9	1	8	-	1
Descent	20	1	3	9	-	3	2	-	2	1
No Change	1,576	91								
Total	1,732	100								

* These 1,732 flight legs represent 417 flights.

First Flight Level Request

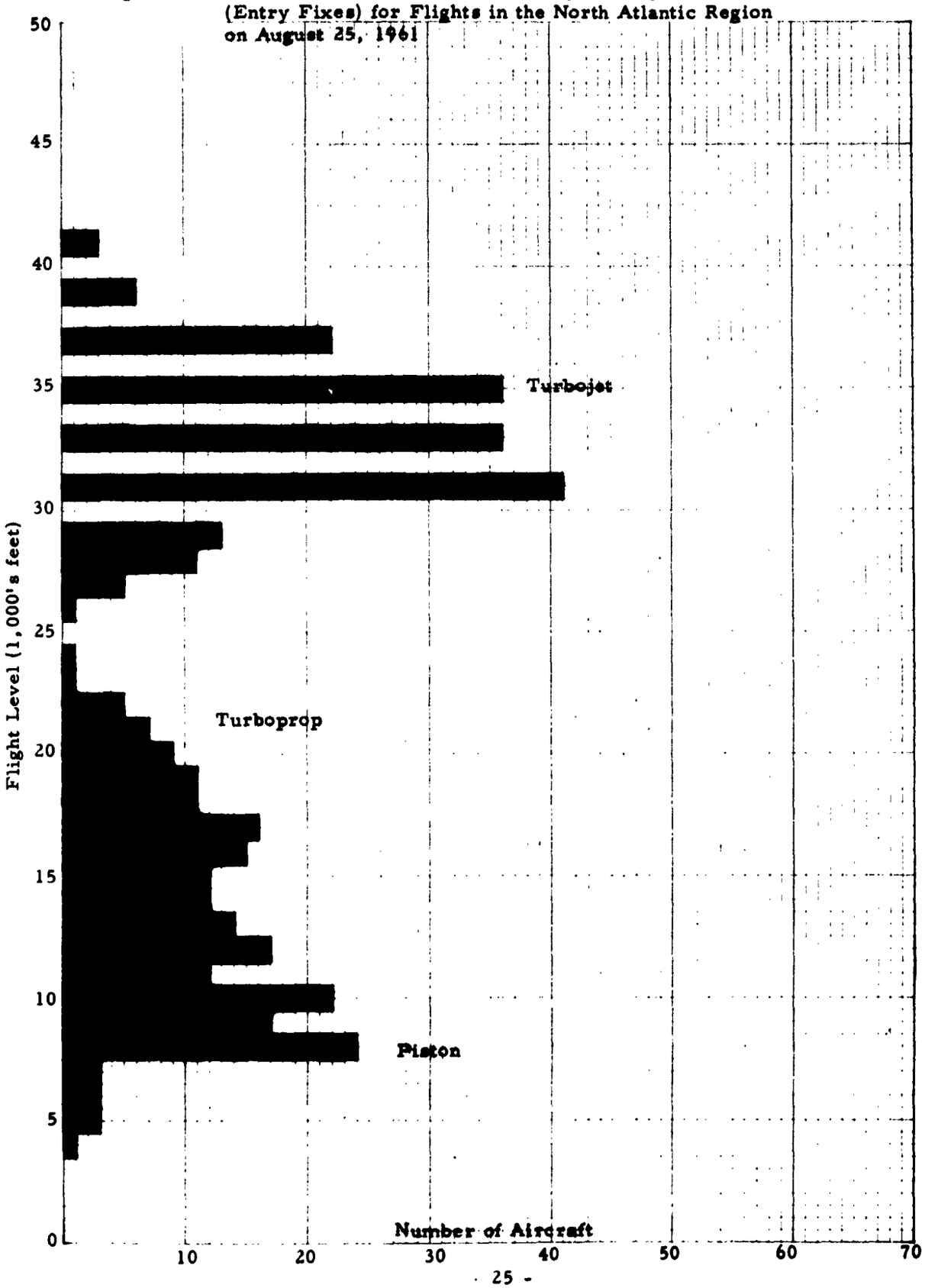
A summary of altitude assignment in terms of first flight level requested by OACC's exercising departure control is shown below:

Assignment with Respect to Request	Flights		Difference in Flight Levels between Request and Assignment				
	Number	Percent	1	2	3	4	5 or more
Less	28	12	5	16	1	4	2
More	23	9	11	8	-	1	3
Identical	192	79					
Total	243	100					

Table 7 - ALTITUDE: Distribution of Assigned Flight Altitudes (Entry Fixes) for Flights in the North Atlantic Region on August 25, 1961

Flt. Level (000')	Piston			Turboprop			Turbojet			Total	Total	Grand
	Civ	Mil	Total	Civ	Mil	Total	Civ	Mil	Total	Civ	Mil	Total
4	-	1	1	-	-	-	-	-	-	-	1	1
5	-	3	3	-	-	-	-	-	-	-	3	3
6	-	3	3	-	-	-	-	-	-	-	3	3
7	1	2	3	-	-	-	-	-	-	1	2	3
8	6	18	24	-	-	-	-	-	-	6	18	24
9	4	13	17	-	-	-	-	-	-	4	13	17
10	10	12	22	-	-	-	-	-	-	10	12	22
11	4	8	12	-	-	-	-	-	-	4	8	12
12	14	3	17	-	-	-	-	-	-	14	3	17
13	13	1	14	-	-	-	-	-	-	13	1	14
14	7	4	11	-	1	1	-	-	-	7	5	12
15	8	1	9	1	2	3	-	-	-	9	3	12
16	4	7	11	3	1	4	-	-	-	7	8	15
17	5	9	14	2	-	2	-	-	-	7	9	16
18	2	3	5	1	5	6	-	-	-	3	8	11
19	4	-	4	5	2	7	-	-	-	9	2	11
20	1	-	1	7	1	8	-	-	-	8	1	9
21	1	-	1	6	-	6	-	-	-	7	-	7
22	-	-	-	4	1	5	-	-	-	4	1	5
23	-	-	-	1	-	1	-	-	-	1	-	1
24	-	-	-	1	-	1	-	-	-	1	-	1
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	1	-	1	1	-	1
27	-	-	-	-	-	-	5	-	5	5	-	5
28	-	-	-	-	-	-	9	2	11	9	2	11
29	-	-	-	1	-	1	11	1	12	12	1	13
30	-	-	-	-	-	-	-	-	-	-	-	-
31	-	-	-	-	-	-	37	4	41	37	4	41
32	-	-	-	-	-	-	-	-	-	-	-	-
33	-	-	-	-	-	-	35	1	36	35	1	36
34	-	-	-	-	-	-	-	-	-	-	-	-
35	-	-	-	-	-	-	35	1	36	35	1	36
36	-	-	-	-	-	-	-	-	-	-	-	-
37	-	-	-	-	-	-	22	-	22	22	-	22
38	-	-	-	-	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	5	1	6	5	1	6
40	-	-	-	-	-	-	-	-	-	-	-	-
41	-	-	-	-	-	-	1	2	3	1	2	3
Total	84	88	172	32	13	45	161	12	173	277	113	390

Figure 6 - ALTITUDE: Distribution of Assigned Flight Levels (Entry Fixes) for Flights in the North Atlantic Region on August 25, 1961



Hourly Activity

Table 8 shows the distribution of entry times at the first oceanic area fix and the distribution of exit times at the last oceanic area fix for flights in the North Atlantic Region on August 25, 1961.

Instantaneous Airborne Counts

Instantaneous airborne counts (IAC) were developed from the above entry and exit times. Table 9 and Figure 7, pages 28 and 29, show the IAC in the North Atlantic Region on August 25, 1961, at the beginning of each hour.

Peak Activity

Inspection of the busy hours on a minute by minute basis revealed that a peak IAC of 85 aircraft for the day occurred at 0424 Zebra. Table 10 and Figure 8, pages 30 and 31, respectively, show the location and altitude distribution by flight direction and ownership class of airborne aircraft at the peak instant.

Table 8 - HOURLY ENTRIES AND EXITS: Hourly Distribution of Flight Entries and Exits to the Oceanic Control Centers of North Atlantic Region on August 25, 1961, by Flight Directi n and Ownership Class

Hour (Zebra)	Entries																		Exits															
	Civil						Military						Total						Civil						Military						Total					
	E	W	N	S	RR	Tot	E	W	N	S	RR	Tot	E	W	N	S	RR	Tot	E	W	N	S	RR	Tot	E	W	N	S	RR	Tot	E	W	N	S	RR	Tot
00	9	6	1	1	-	17	3	-	1	-	1	5	12	6	2	1	1	22	3	4	1	-	-	8	-	1	-	-	1	2	3	5	1	-	-	10
01	11	7	2	2	-	22	3	2	2	-	2	9	14	9	4	2	2	31	4	9	1	1	-	15	1	1	-	-	1	3	5	10	1	1	1	18
02	13	7	-	-	-	20	1	-	-	-	-	1	14	7	-	-	-	21	2	4	1	1	-	8	-	3	1	-	2	6	2	7	2	1	2	14
03	11	5	1	-	-	17	3	1	-	-	-	4	14	6	1	-	-	21	5	3	1	1	-	10	2	1	-	-	-	3	7	4	1	1	-	13
04	10	2	-	3	-	15	1	1	1	-	-	3	11	3	1	3	-	18	7	2	1	-	-	10	1	2	1	-	-	4	8	4	2	-	-	14
05	2	4	1	-	-	7	2	2	-	-	1	5	4	6	1	-	1	12	17	6	1	-	-	24	3	-	1	-	-	4	20	6	2	-	-	28
06	10	1	-	-	-	11	1	2	1	-	1	5	11	3	1	-	1	16	10	6	-	-	-	16	1	2	-	-	-	3	11	8	-	-	-	19
07	3	2	-	2	-	7	-	1	-	-	-	1	3	3	-	2	-	8	9	5	1	1	-	16	2	1	-	-	-	3	11	6	1	1	-	19
08	3	2	-	-	-	5	3	4	1	-	-	8	6	6	1	-	-	13	8	3	-	4	-	15	3	1	-	-	-	4	11	4	-	4	-	19
09	4	3	1	2	1	11	-	5	-	-	-	5	4	8	1	2	1	16	9	4	-	-	-	13	1	1	1	-	-	3	10	5	1	-	-	16
10	1	3	-	-	-	4	-	2	-	-	-	2	1	5	-	-	-	6	-	3	-	-	-	3	4	1	-	-	-	5	4	4	-	-	-	8
11	1	8	-	-	-	9	1	3	-	-	1	5	2	11	-	-	1	14	5	2	1	1	-	9	2	2	1	-	-	5	7	4	2	1	-	14
12	-	6	-	1	-	7	-	1	-	1	1	3	-	7	-	2	1	10	3	4	-	2	-	9	1	4	1	-	1	7	4	8	1	2	1	16
13	1	9	-	1	-	11	1	-	-	-	-	1	2	9	-	1	-	12	-	-	-	1	1	2	-	4	-	1	-	5	-	4	-	2	1	7
14	1	6	-	3	-	10	3	5	-	1	2	11	4	11	-	4	2	21	3	5	1	-	-	9	2	2	-	1	3	8	5	7	1	1	3	17
15	3	7	-	1	-	11	3	1	-	-	-	4	6	8	-	1	-	15	1	9	-	1	-	11	2	1	-	-	-	3	3	10	-	1	-	14
16	2	8	1	1	-	12	-	2	-	1	-	3	2	10	1	2	-	15	1	5	-	3	-	9	-	1	-	1	1	3	1	6	-	4	1	12
17	3	9	1	2	-	15	2	5	-	-	-	7	5	14	1	2	-	22	-	11	-	-	-	11	3	4	-	-	-	7	3	15	-	-	-	18
18	3	4	-	-	1	8	1	3	-	1	-	5	4	7	-	1	1	13	1	8	1	2	-	12	1	2	-	-	-	3	2	10	1	2	-	15
19	4	7	1	3	-	15	-	-	-	-	-	-	4	7	1	3	-	15	4	7	1	1	-	13	-	4	-	1	-	5	4	11	1	2	-	18
20	2	3	3	1	-	9	4	4	1	-	1	10	6	7	4	1	1	19	5	8	-	2	-	15	1	4	1	-	-	6	6	12	1	2	-	21
21	1	5	3	1	-	10	2	6	-	1	-	9	3	11	3	2	-	19	1	7	3	-	-	11	1	2	-	-	1	4	2	9	3	-	1	15
22	2	3	3	-	-	8	1	2	-	2	-	5	3	5	3	2	-	13	5	10	3	3	1	22	2	4	-	-	1	7	7	14	3	3	2	29
23	1	1	-	1	-	3	-	2	-	-	-	2	1	3	-	1	-	5	1	3	2	-	-	6	3	5	-	2	-	10	4	8	2	2	-	16
Grand Total	101	118	18	25	2	264	35	54	7	7	10	113	136	172	25	32	12	377	104	128	19	24	2	277	36	53	7	6	11	173	140	181	26	30	13	390

Table 9 - INSTANTANEOUS AIRBORNE COUNTS: Instantaneous Airborne Aircraft Counts (IAC) at the Beginning of Each Hour in the North Atlantic Region on August 25, 1961, by Flight Direction and Ownership Class

Hour (Zebra)	Civil						Military						Total					
	E	W	N	S	RR	Tot	E	W	N	S	RR	Tot	E	W	N	S	RR	Tot
00	7	17	3	-	-	27	3	9	-	-	1	13	10	26	3	-	1	40
01	13	19	3	1	-	36	6	8	1	-	1	16	19	27	4	1	1	52
02	20	17	4	2	-	43	8	9	3	-	2	22	28	26	7	2	2	65
03	31	20	3	1	-	55	9	6	2	-	-	17	40	26	5	1	-	72
04	37	22	3	-	-	62	10	6	2	-	-	18	47	28	5	-	-	80
05	40	22	2	3	-	67	10	5	2	-	-	17	50	27	4	3	-	84
06	25	20	2	3	-	50	9	7	1	-	1	18	34	27	3	3	1	68
07	25	15	2	3	-	45	9	7	2	-	2	20	34	22	4	3	2	65
08	19	12	1	4	-	36	7	7	2	-	2	18	26	19	3	4	2	54
09	14	11	1	-	-	26	7	10	3	-	2	22	21	21	4	-	2	48
10	9	10	2	2	1	24	6	14	2	-	2	24	15	24	4	2	3	48
11	10	10	2	2	1	25	2	15	2	-	2	21	12	25	4	2	3	46
12	6	16	1	1	1	25	1	16	1	-	3	21	7	32	2	1	4	46
13	3	18	1	-	1	23	-	13	-	1	3	17	3	31	1	1	4	40
14	4	27	1	-	-	32	1	9	-	-	3	13	5	36	1	-	3	45
15	2	28	-	3	-	33	2	12	-	-	2	16	4	40	-	3	2	49
16	4	26	-	3	-	33	3	12	-	-	2	17	7	38	-	3	2	50
17	5	29	1	1	-	36	3	13	-	-	1	17	8	42	1	1	1	53
18	8	27	2	3	-	40	2	14	-	-	1	17	10	41	2	3	1	57
19	10	23	1	1	1	36	2	15	-	1	1	19	12	38	1	2	2	55
20	10	23	1	3	1	38	2	11	-	-	1	14	12	34	1	3	2	52
21	7	18	4	2	1	32	5	11	-	-	2	18	12	29	4	2	3	50
22	7	16	4	3	1	31	6	15	-	1	1	23	13	31	4	4	2	54
23	4	9	4	-	-	17	5	13	-	3	-	21	9	22	4	3	-	38
Grand Total	320	455	48	41	8	872	118	257	23	6	35	439	438	712	71	47	43	1,311

Note: Totals approximate peak day flying hours within the North Atlantic Region. RR signifies round robin flight.

Figure 7 - INSTANTANEOUS AIRBORNE COUNTS: Instantaneous Airborne Aircraft Counts (IAC) at the Beginning of Each Hour in the North Atlantic Region on August 25, 1961

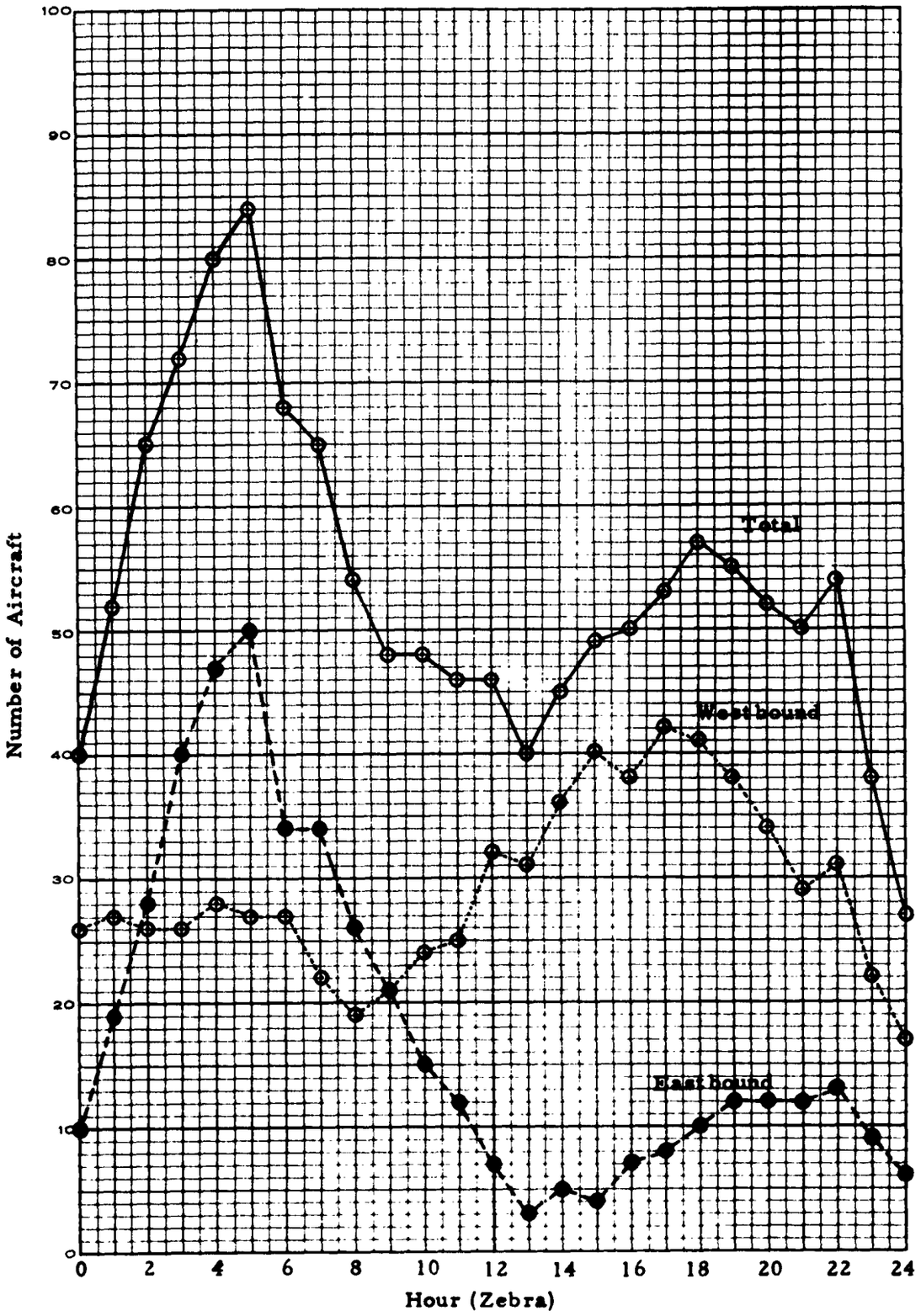


Table 10 - PEAK AIRCRAFT COUNT: Distribution of Assigned Flight Levels for Aircraft Airborne at the Peak Traffic Instant (0424 Zebra) in the North Atlantic Region on August 25, 1961, by Ownership and Flight Direction

Flt. Level (000')	Number of Flights								
	Civil			Military			Total		
	East	West	Total	East	West	Total	East	West	Total
5	-	-	-	-	-	-	-	-	-
6	-	1	1	-	-	-	-	1	1
7	-	-	-	-	-	-	-	-	-
8	-	3	3	-	5	5	-	8	8
9	1	-	1	2	-	2	3	-	3
10	-	2	2	-	2	2	-	4	4
11	-	-	-	2	-	2	2	-	2
12	-	6	6	-	-	-	-	6	6
13	2	-	2	-	-	-	2	-	2
14	-	2	2	-	-	-	-	2	2
15	2	-	2	1	-	1	3	-	3
16	-	-	-	-	1	1	-	1	1
17	1	-	1	4	1	5	5	1	6
18	-	1	1	-	-	-	-	1	1
19	2	-	2	-	-	-	2	-	2
20	-	2	2	-	-	-	-	2	2
21	1	-	1	-	-	-	1	-	1
22	-	3	3	-	-	-	-	3	3
23	2	-	2	1	-	1	3	-	3
24	-	1	1	-	-	-	-	1	1
25	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-
27	2	-	2	-	-	-	2	-	2
28	-	-	-	-	-	-	-	-	-
29	1	-	1	1	-	1	2	-	2
30	-	-	-	-	-	-	-	-	-
31	3	1	4	-	-	-	3	1	4
32	-	-	-	-	-	-	-	-	-
33	10	-	10	-	-	-	10	-	10
34	-	-	-	-	-	-	-	-	-
35	3	3	6	-	-	-	3	3	6
36	-	-	-	-	-	-	-	-	-
37	8	-	8	-	-	-	8	-	8
38	-	-	-	-	-	-	-	-	-
39	2	-	2	-	-	-	2	-	2
Total	40	25	65	11	9	20	51	34	85

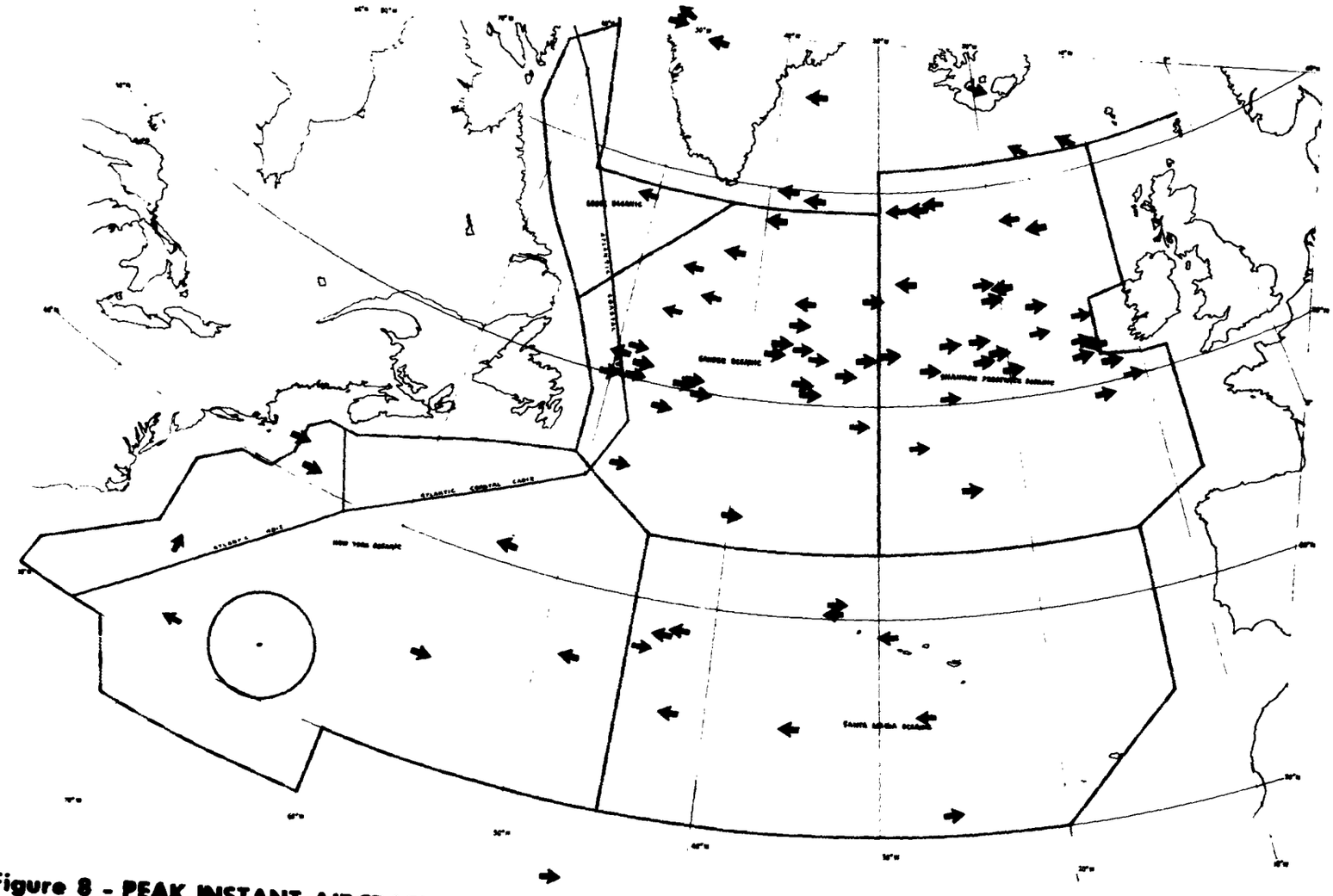


Figure 8 - PEAK INSTANT AIRCRAFT LOCATIONS: Location of Aircraft Airborne at the Peak Traffic Instant (0424 Zebra) in North Atlantic Region on August 25, 1961

Meridian Crossing Analysis

An analysis of traffic at the 20° W, 30° W, 40° W and 50° W longitude meridian crossings was made in terms of the following:

Crossing Latitude

Altitude

Time

Separation

Meridian Crossing Latitudes

Table 11 and Figure 9, pages 34 and 35, show the distribution of crossing latitudes at the 20° W, 30° W, 40° W and 50° W longitude meridians for flights in the North Atlantic Region on August 25, 1961. Only flights crossing the particular meridian between 0000-2359 Zebra on August 25, 1961, were counted so that in some cases a flight is not included in all four meridian tables. Also, flights landing at intermediate stops such as the Azores and Iceland may not have crossed all four meridians.

Meridian Crossing Altitudes

Table 12, page 36, shows the distribution of assigned flight levels for aircraft crossing the selected meridians on August 25, 1961, by flight direction. The busiest flight level for all meridians was 33,000 feet.

Meridian Crossing Times

Table 13, page 37, shows the distribution of meridian crossing times for flights in the North Atlantic Region on August 25, 1961, by flight direction. Traffic shows a marked peaking effect in terms of flight direction.

Flight Separation

Table 14 and Figure 10, pages 38 thru 43, show time interval separations between successive flights at the same flight level crossing reporting meridians with less than two-degree latitude separation (lateral minimum) by flight direction. Each flight that crossed a selected meridian was inspected in turn. The time interval between its crossing and the next flight at the same altitude with less than two-degrees latitude separation was recorded. If no such flight followed on the peak day, no entry was made.

Figures 11a thru 11d, pages 44-47, show flight separation in terms of reporting times and fix latitudes for flights crossing the 20° W, 30° W, 40° W, and 50° W longitude meridians at the 33,000 feet flight level in the North Atlantic Region on August 25, 1961. Eastbound flights are represented by arrows pointing to the right; Westbound flights are represented by arrows pointing to the left. Actual crossing time is represented by the left hand end of the plotted 30 minute interval (i.e., Eastbound flights by the tail of the arrow and Westbound flights by the head).

A comparison of separation intervals at the busiest flight level with all flight levels is shown below:

Time Interval (minutes)	33,000'		All levels	
	Number	Percent	Number	Percent
30-39	15	14.2	59	11.7
40-49	12	11.3	59	11.7
50-59	20	18.9	45	8.9
60-69	12	11.3	39	7.7
70-79	9	8.5	21	4.1
80-89	7	6.6	24	4.7
Tot. under 90	75	70.8	247	48.8
Over 90	31	29.2	258	51.2
Grand Total	106	100.0	505	100.0

Table 11 - MERIDIAN CROSSING LATITUDES: Distribution of Latitudes of Flights Crossing the 20°W, 30°W, 40°W, 50°W Meridians in the North Atlantic Region on August 25, 1961, by Flight Direction

Latitude North	Number of Flights											
	20° W			30° W			40° W			50° W		
	East	West	Tot	East	West	Tot	East	West	Tot	East	West	Tot
21	-	-	-	-	1	1	-	-	-	-	-	-
25	-	-	-	-	-	-	-	1	1	-	-	-
28	-	-	-	1	-	1	-	1	1	-	-	-
29	-	-	-	1	-	1	-	1	1	-	-	-
30	-	-	-	-	-	-	-	1	1	-	-	-
31	-	-	-	-	-	-	-	-	-	-	-	-
32	-	-	-	-	-	-	-	-	-	-	-	-
33	1	-	1	-	-	-	-	-	-	-	1	1
34	-	-	-	-	2	2	-	1	1	-	1	1
35	-	-	-	-	1	1	-	1	1	-	-	-
36	1	2	3	-	2	2	-	-	-	2	3	5
37	2	5	7	-	1	1	-	1	1	-	-	-
38	2	2	4	-	-	-	2	9	11	-	7	7
39	-	-	-	5	13	18	-	1	1	-	-	-
40	-	-	-	-	-	-	-	-	-	-	3	3
41	1	-	1	-	-	-	1	-	1	-	1	1
42	-	8	8	-	-	-	-	-	-	1	-	1
43	3	4	7	-	-	-	2	-	2	-	-	-
44	1	-	1	2	2	4	1	2	3	2	1	3
45	-	-	-	1	-	1	2	-	2	3	-	3
46	1	-	1	-	-	-	-	-	-	1	-	1
47	-	-	-	1	-	1	3	-	3	1	-	1
48	1	-	1	2	-	2	5	-	5	16	-	16
49	1	-	1	7	-	7	10	-	10	13	1	14
50	9	-	9	9	-	9	19	-	19	41	9	50
51	13	-	13	16	-	16	24	1	25	2	6	8
52	21	1	22	23	1	24	15	7	22	5	8	13
53	22	7	29	18	5	23	3	5	8	1	2	3
54	8	1	9	5	1	6	4	3	7	2	8	10
55	8	5	13	5	7	12	-	2	2	-	1	1
56	3	8	11	1	3	4	2	9	11	1	8	9
57	-	12	12	-	10	10	1	4	5	4	11	15
58	1	13	14	1	7	8	1	9	10	-	30	30
59	-	29	29	-	20	20	1	21	22	-	4	4
60	-	11	11	-	22	22	4	21	25	-	4	4
61	1	2	3	2	4	6	-	5	5	-	-	-
62	1	8	9	3	8	11	-	2	2	-	1	1
63	3	3	6	-	1	1	-	5	5	-	-	-
64	-	-	-	1	4	5	-	-	-	-	2	2
65	1	1	2	-	-	-	1	1	2	-	-	-
66	-	-	-	1	-	1	1	1	2	-	-	-
67	-	1	1	-	-	-	1	1	2	-	-	-
68	-	-	-	-	1	1	-	-	-	-	-	-
75	-	-	-	-	1	1	-	-	-	-	-	-
Total	105	123	228	105	117	222	103	116	219	95	112	207

Note: Latitude classes include 00 to 59 minutes for each degree. Four Polar Route flights above 80°N. not included.

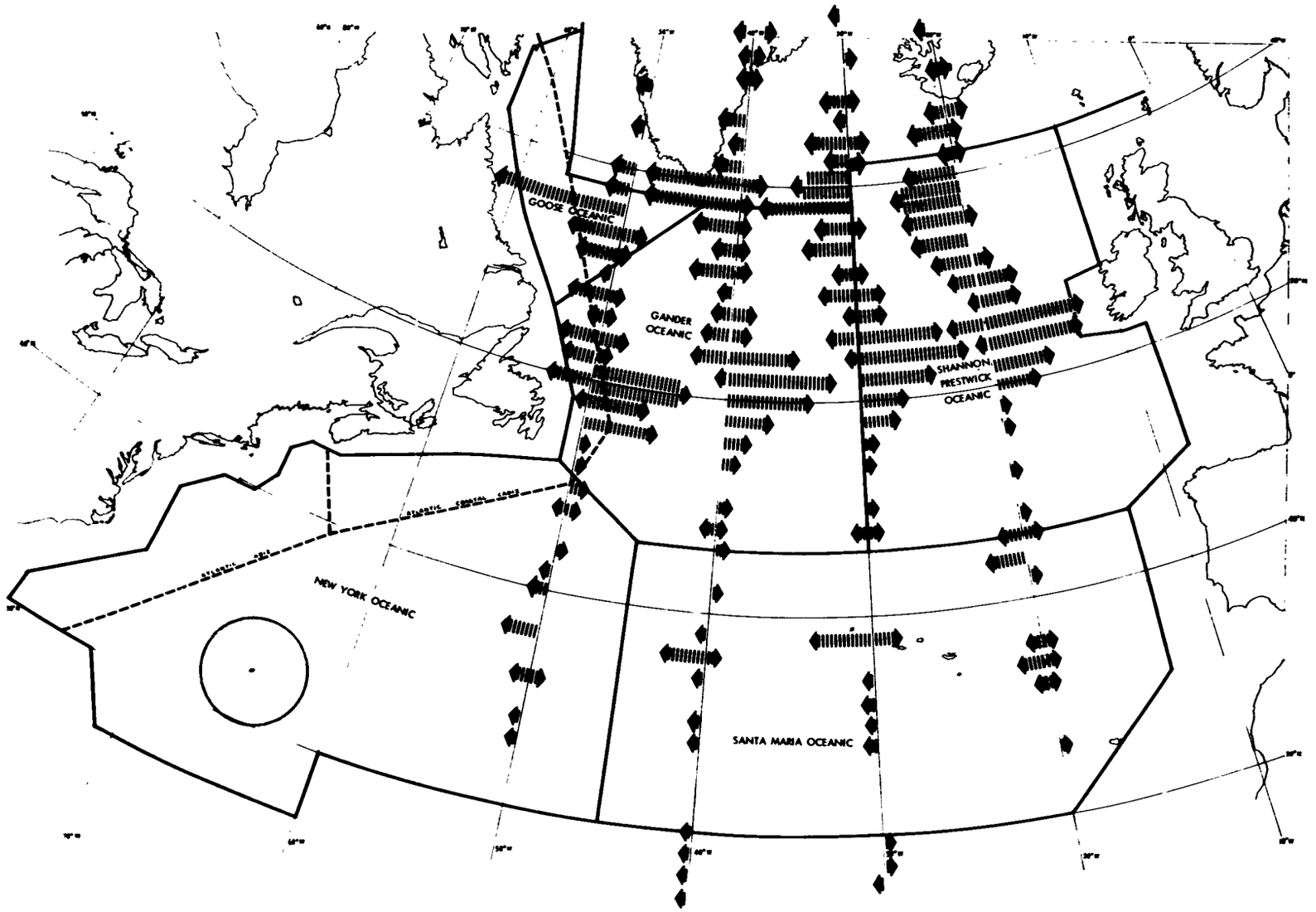


Figure 9 - MERIDIAN CROSSINGS: Distribution of Meridian Crossings by Flights in North Atlantic Region on August 25, 1961

Table 12 - MERIDIAN CROSSING ALTITUDES: Distribution of Assigned Flight Levels for Aircraft Crossing the 20°W, 30°W, 40°W, 50°W Meridians in the North Atlantic Region on August 25, 1961, by Flight Direction

Flt. Level (000')	Number of Flights											
	20° W			30° W			40° W			50° W		
	East	West	Tot	East	West	Tot	East	West	Tot	East	West	Tot
5	1	-	1	-	-	-	-	-	-	-	-	-
6	-	2	2	-	1	1	-	-	-	-	1	1
7	-	-	-	-	-	-	-	-	-	-	-	-
8	-	7	7	-	9	9	-	8	8	-	9	9
9	4	-	4	2	-	2	2	-	2	3	-	3
10	-	11	11	-	9	9	-	10	10	-	9	9
11	4	-	4	5	-	5	7	-	7	7	-	7
12	-	10	10	-	8	8	-	8	8	-	8	8
13	6	-	6	6	-	6	10	-	10	7	-	7
14	-	7	7	-	7	7	-	8	8	-	7	7
15	8	-	8	8	-	8	6	-	6	7	-	7
16	-	4	4	-	2	2	-	2	2	-	3	3
17	9	-	9	9	-	9	6	-	6	5	-	5
18	-	4	4	-	5	5	-	6	6	-	3	3
19	6	-	6	6	-	6	8	-	8	7	-	7
20	-	7	7	-	3	3	-	2	2	-	3	3
21	4	-	4	8	-	8	7	-	7	4	-	4
22	-	5	5	-	6	6	-	3	3	-	1	1
23	6	-	6	2	-	2	1	-	1	-	-	-
24	-	1	1	-	1	1	-	3	3	-	5	5
25	-	-	-	-	-	-	-	-	-	-	-	-
26	-	-	-	-	-	-	-	-	-	-	1	1
27	1	-	1	-	-	-	-	-	-	-	-	-
28	-	6	6	-	6	6	-	5	5	-	2	2
29	3	-	3	4	-	4	5	-	5	5	1	6
30	-	-	-	-	-	-	-	-	-	-	-	-
31	3	23	26	4	20	24	4	12	16	4	8	12
32												
33	24	9	33	22	12	34	21	13	34	22	12	34
34	-	-	-	-	-	-	-	-	-	-	-	-
35	6	21	27	6	21	27	6	24	30	7	26	33
36	-	-	-	-	-	-	-	-	-	-	-	-
37	14	5	19	17	6	23	14	7	21	12	7	19
38	-	-	-	-	-	-	-	-	-	-	-	-
39	4	1	5	4	1	5	4	5	9	3	6	9
40	-	-	-	-	-	-	-	-	-	-	-	-
41	2	-	2	2	-	2	2	-	2	2	-	2
Total	105	123	228	105	117	222	103	116	219	95	112	207

Note: Four Polar Route Flights (three at 33,000' and one at 35,000') not included.

Table 13 - MERIDIAN CROSSING TIMES: Hourly Distributions of Aircraft Crossing Times at the 20°W, 30°W, 40°W, 50°W Meridian Crossings for Flights in the North Atlantic Region on August 25, 1961, by Flight Direction

Hour (Zebra)	Number of Flights											
	20° W			30° W			40° W			50° W		
	East	West	Tot	East	West	Tot	East	West	Tot	East	West	Tot
00	1	5	6	2	1	3	3	4	7	9	2	11
01	2	10	12	5	3	8	8	1	9	10	3	13
02	6	4	10	6	8	14	13	1	14	12	3	15
03	7	5	12	17	6	23	14	8	22	12	1	13
04	16	3	19	15	6	21	8	6	14	9	2	11
05	11	3	14	9	3	12	11	6	17	6	7	13
06	9	-	9	6	6	12	7	4	11	9	7	16
07	8	1	9	9	-	9	9	4	13	5	3	8
08	10	2	12	6	2	8	4	3	7	-	3	3
09	5	5	10	5	4	9	2	2	4	4	3	7
10	3	5	8	4	3	7	4	2	6	2	3	5
11	8	2	10	1	4	5	2	3	5	1	1	2
12	-	5	5	1	5	6	1	8	9	-	3	3
13	3	10	13	3	6	9	-	4	4	-	4	4
14	2	9	11	-	7	7	-	10	10	2	4	6
15	-	8	8	-	10	10	-	6	6	1	14	15
16	-	4	4	-	6	6	3	8	11	2	7	9
17	-	11	11	1	10	11	3	7	10	5	8	13
18	1	5	6	5	7	12	3	9	12	4	6	10
19	6	10	16	3	5	8	3	7	10	1	12	13
20	1	3	4	3	6	9	3	4	7	-	5	5
21	3	2	5	2	2	4	-	7	7	1	7	8
22	1	5	6	1	3	4	2	1	3	-	3	3
23	2	6	8	1	4	5	-	1	1	-	1	1
Total	105	123	228	105	117	222	103	116	219	95	112	207

Note: Four Polar Route Flights Crossing above 80°N Latitude not included.

Table 14a - TIME SEPARATION (All Flights): Distribution of Time Intervals Between Successive Flights at the Same Flight Level Crossing Reporting Meridians with Less Than Two-Degrees Latitude Separation in the North Atlantic Region on August 25, 1961

Time Interval (minutes)	Meridian 20° W		30° W		40° W		50° W		Total	
	#	%	#	%	#	%	#	%	#	%
30- 39	18	13.5	12	9.4	12	9.9	17	13.8	59	11.7
40- 49	12	9.0	13	10.2	15	12.4	19	15.4	59	11.7
50- 59	12	9.0	14	10.9	11	9.1	8	6.5	45	8.9
60- 69	10	7.5	8	6.2	10	8.3	11	8.9	39	7.7
70- 79	5	3.8	4	3.1	6	4.9	6	4.9	21	4.1
80- 89	5	3.8	8	6.2	6	4.9	5	4.1	24	4.7
90- 99	6	4.5	1	0.8	1	0.8	4	3.3	12	2.4
100-109	8	6.0	2	1.6	1	0.8	4	3.3	15	3.0
110-119	7	5.3	10	7.8	4	3.3	4	3.3	25	4.9
120-129	6	4.5	3	2.3	5	4.1	4	3.3	18	3.5
130-139	-	-	2	1.6	2	1.7	2	1.6	6	1.2
140-149	1	0.7	2	1.6	3	2.5	-	-	6	1.2
150-159	1	0.7	3	2.3	-	-	2	1.6	6	1.2
160-169	1	0.7	-	-	1	0.8	1	0.8	3	0.6
170-179	1	0.7	5	3.9	4	3.3	2	1.6	12	2.4
180-189	7	5.3	2	1.6	5	4.1	2	1.6	16	3.2
190-199	4	3.0	3	2.3	2	[illegible]	-	1.6	11	2.2
200-209	-	-	4	3.1	4	3.3	-	-	8	1.6
210-219	1	0.7	-	-	-	-	-	-	1	0.2
220-229	1	0.7	1	0.8	1	0.8	-	-	3	0.6
230-239	-	-	2	1.6	1	0.8	1	0.8	4	0.8
4 hrs *	2	1.5	5	3.9	10	8.3	8	6.5	25	4.9
5 hrs	3	2.3	8	6.2	4	3.3	2	1.6	17	3.3
6 hrs	5	3.8	3	2.3	2	1.7	3	2.5	13	2.6
7 hrs	1	0.7	-	-	1	0.8	2	1.6	4	0.8
8 hrs	-	-	1	0.8	-	-	2	1.6	3	0.6
9 hrs	5	3.8	1	0.8	2	1.7	1	0.8	9	1.8
10 hrs	-	-	-	-	1	0.8	3	2.5	4	0.8
11 hrs	1	0.8	2	1.6	[illegible]	2.5	-	-	6	1.2
12 hrs	1	0.8	-	-	2	1.7	2	1.6	5	1.0
13 hrs	-	-	1	0.8	2	1.7	2	1.6	5	1.0
14 hrs	-	-	2	1.6	-	-	-	-	2	0.4
15 hrs	1	0.8	-	-	-	-	1	0.8	2	0.4
16 hrs	1	0.8	3	2.3	-	-	3	2.5	7	1.4
17 hrs	3	2.3	-	-	-	-	-	-	3	0.6
18 hrs	2	1.5	1	0.8	-	-	-	-	3	0.6
19 hrs	-	-	1	0.8	-	-	-	-	1	0.2
20 hrs	-	-	-	-	-	-	--	-	-	-
21 hrs	2	1.5	1	0.8	-	-	-	-	3	0.6
22 hrs	-	-	-	-	-	-	-	-	-	-
23 hrs	-	-	-	-	-	-	-	-	-	-
Total	133	100.0	128	100.0	121	100.0	123	100.0	505	100.0

* Hourly intervals measured 00 to 59 minutes inclusive.

Figure 10 - TIME SEPARATION: Percentage Distribution of Time Intervals (10 minute) Between Successive Flights at the Same Flight Level and Crossing Selected Reporting Meridians with Less Than Two-Degrees Latitude Separation, North Atlantic Region, August 23, 1961

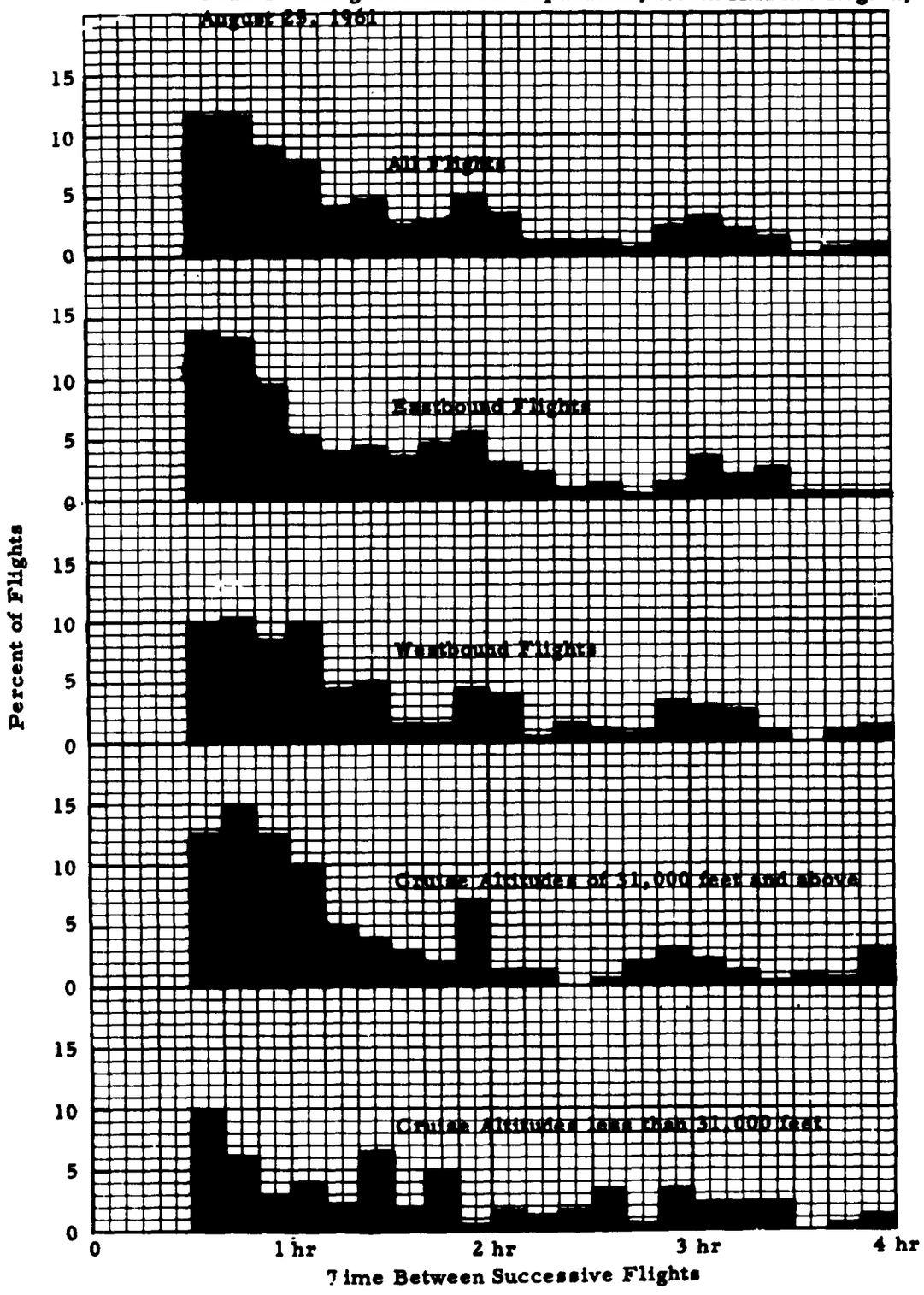


Table 14b - TIME SEPARATION (Eastbound Flights): Distribution of Time Intervals Between Successive Flights at the Same Flight Level Crossing Reporting Meridians with Less Than Two-Degrees Latitude Separation in the North Atlantic Region on August 25, 1961

Time Interval (minutes)	Meridian									
	20° W		30° W		40° W		50° W		Total	
	#	%	#	%	#	%	#	%	#	%
30- 39	7	11.7	5	8.8	8	14.5	12	20.0	32	13.8
40- 49	4	6.7	7	12.3	10	18.2	10	16.7	31	13.4
50- 59	7	11.6	7	12.3	5	9.1	3	5.0	22	9.5
60- 69	2	3.3	2	3.5	3	5.5	5	8.3	12	5.2
70- 79	2	3.3	2	3.5	3	5.5	2	3.3	9	3.9
80- 89	3	5.0	4	7.0	1	1.8	2	3.3	10	4.3
90- 99	4	6.7	-	-	1	1.8	3	5.0	8	3.5
100-109	6	10.0	2	3.5	1	1.8	2	3.3	11	4.7
110-119	4	6.7	5	8.8	2	3.7	2	3.3	13	5.6
120-129	2	3.3	-	-	3	5.5	2	3.3	7	3.0
130-139	-	-	2	3.5	1	1.8	2	3.3	5	2.2
140-149	-	-	1	1.8	1	1.8	-	-	2	0.9
150-159	-	-	2	3.5	-	-	1	1.7	3	1.3
160-169	-	-	-	-	1	1.8	-	-	1	0.4
170-179	1	1.7	2	3.5	-	-	-	-	3	1.3
180-189	5	8.3	-	-	2	3.7	1	1.7	8	3.5
190-199	3	5.0	-	-	-	-	1	1.7	4	1.7
200-209	-	-	3	5.3	3	5.5	-	-	6	2.6
210-219	1	1.7	-	-	-	-	-	-	1	0.4
220-229	-	-	-	-	1	1.8	-	-	1	0.4
230-239	-	-	1	1.8	-	-	-	-	1	0.4
4 hrs *	2	3.3	2	3.5	2	3.6	2	3.3	8	3.5
5 hrs	2	3.3	4	7.0	2	3.6	-	-	8	3.5
6 hrs	2	3.3	1	1.8	1	1.8	2	3.3	6	2.6
7 hrs	-	-	-	-	-	-	-	-	-	-
8 hrs	-	-	-	-	-	-	1	1.7	1	0.4
9 hrs	-	-	-	-	-	-	1	1.7	1	0.4
10 hrs	-	-	-	-	1	1.8	3	5.0	4	1.7
11 hrs	-	-	-	-	1	1.8	-	-	1	0.4
12 hrs	-	-	-	-	-	-	1	1.7	1	0.4
13 hrs	-	-	-	-	2	3.6	1	1.7	3	1.3
14 hrs	-	-	1	1.7	-	-	-	-	1	0.4
15 hrs	-	-	-	-	-	-	-	-	-	-
16 hrs	1	1.7	2	3.5	-	-	1	1.7	4	1.7
17 hrs	1	1.7	-	-	-	-	-	-	1	0.4
18 hrs	1	1.7	1	1.7	-	-	-	-	2	0.9
19 hrs	-	-	1	1.7	-	-	-	-	1	0.4
20 hrs	-	-	-	-	-	-	-	-	-	-
21 hrs	-	-	-	-	-	-	-	-	-	-
22 hrs	-	-	-	-	-	-	-	-	-	-
23 hrs	-	-	-	-	-	-	-	-	-	-
Total	60	100.0	57	100.0	55	100.0	60	100.0	232	100.0

* Hourly intervals measured 00 to 59 minutes inclusive.

Table 14c - TIME SEPARATION (Westbound Flights): Distribution of Time Intervals Between Successive Flights at the Same Flight Level Crossing Reporting Meridians with Less Than Two-Degrees Latitude Separation in the North Atlantic Region on August 25, 1961

Time Interval (minutes)	Meridian 20° W		30° W		40° W		50° W		Total	
	#	%	#	%	#	%	#	%	#	%
30- 39	11	15.1	7	9.9	4	6.1	5	7.9	27	9.9
40- 49	8	10.9	6	8.5	5	7.6	9	14.2	28	10.3
50- 59	5	6.8	7	9.9	6	9.1	5	7.9	23	8.4
60- 69	8	11.0	6	8.5	7	10.6	6	9.5	27	9.9
70- 79	3	4.1	2	2.8	3	4.6	4	6.3	12	4.4
80- 89	2	2.7	4	5.6	5	7.6	3	4.7	14	5.1
90- 99	2	2.7	1	1.4	-	-	1	1.6	4	1.5
100-109	2	2.7	-	-	-	-	2	3.2	4	1.5
110-119	3	4.1	5	7.1	2	3.0	2	3.2	12	4.4
120-129	4	5.5	3	4.2	2	3.0	2	3.2	11	4.0
130-139	-	-	-	-	1	1.5	-	-	1	0.4
140-149	1	1.4	1	1.4	2	3.0	-	-	4	1.5
150-159	1	1.4	1	1.4	-	-	1	1.6	3	1.1
160-169	1	1.4	-	-	-	-	1	1.6	2	0.7
170-179	-	-	3	4.2	4	6.1	2	3.2	9	3.3
180-189	2	2.7	2	2.8	3	4.6	1	1.6	8	2.9
190-199	1	1.4	3	4.2	2	3.0	1	1.6	7	2.6
200-209	-	-	1	1.4	1	1.5	-	-	2	0.7
210-219	-	-	-	-	-	-	-	-	-	-
220-229	1	1.4	1	1.4	-	-	-	-	2	0.7
230-239	-	-	1	1.4	1	1.5	1	1.6	3	1.1
4 hrs *	-	-	3	4.2	8	12.2	6	9.5	17	6.2
5 hrs	1	1.4	4	5.7	2	3.0	2	3.2	9	3.3
6 hrs	3	4.1	2	2.8	1	1.5	1	1.6	7	2.6
7 hrs	1	1.4	-	-	1	1.5	2	3.2	4	1.5
8 hrs	-	-	1	1.4	-	-	1	1.6	2	0.7
9 hrs	5	6.8	1	1.4	2	3.0	-	-	8	2.9
10 hrs	-	-	-	-	-	-	-	-	-	-
11 hrs	1	1.4	2	2.8	2	3.0	-	-	5	1.8
12 hrs	1	1.4	-	-	2	3.0	1	1.6	4	1.5
13 hrs	-	-	1	1.4	-	-	1	1.6	2	0.7
14 hrs	-	-	1	1.4	-	-	-	-	1	0.4
15 hrs	1	1.4	-	-	-	-	1	1.6	2	0.7
16 hrs	-	-	1	1.4	-	-	2	3.2	3	1.1
17 hrs	2	2.7	-	-	-	-	-	-	2	0.7
18 hrs	1	1.4	-	-	-	-	-	-	1	0.4
19 hrs	-	-	-	-	-	-	-	-	-	-
20 hrs	-	-	-	-	-	-	-	-	-	-
21 hrs	2	2.7	1	1.4	-	-	-	-	3	1.1
22 hrs	-	-	-	-	-	-	-	-	-	-
23 hrs	-	-	-	-	-	-	-	-	-	-
Total	73	100.0	71	100.0	66	100.0	63	100.0	273	100.0

* Hourly intervals measured 00 to 59 minutes inclusive.

Table 14d - TIME SEPARATION (Altitudes 31,000 Feet and Above): Distribution of Time Intervals Between Successive Flights at the Same Flight Level Crossing Reporting Meridians with Less Than Two-Degrees Latitude Separation in the North Atlantic Region on August 25, 1961

Time Interval (minutes)	Meridian									
	20° W		30° W		40° W		50° W		Total	
	#	%	#	%	#	%	#	%	#	%
30- 39	12	14.5	9	11.0	8	10.4	12	15.0	41	12.7
40- 49	9	10.9	12	14.7	13	16.8	14	17.5	48	14.9
50- 59	12	14.5	12	14.7	9	11.7	7	8.8	40	12.4
60- 69	5	6.0	8	9.8	9	11.7	10	12.5	32	9.9
70- 79	4	4.8	3	3.7	5	6.5	4	5.0	16	5.0
80- 89	3	3.6	4	4.9	2	2.6	3	3.8	12	3.7
90- 99	5	6.0	-	-	1	1.3	3	3.8	9	2.8
100-109	3	3.6	-	-	-	-	3	3.8	6	1.9
110-119	6	7.3	10	12.2	4	5.2	3	3.8	23	7.1
120-129	5	6.0	3	3.7	5	6.5	2	2.5	15	4.7
130-139	-	-	1	1.2	1	1.3	2	2.5	4	1.3
140-149	1	1.2	1	1.2	2	2.6	-	-	4	1.3
150-159	-	-	-	-	-	-	-	-	-	-
160-169	1	1.2	-	-	-	-	1	1.2	2	0.6
170-179	1	1.2	1	1.2	2	2.6	2	2.5	6	1.9
180-189	4	4.8	2	2.4	3	3.9	1	1.2	10	3.1
190-199	4	4.8	-	-	2	2.6	1	1.2	7	2.2
200-209	-	-	2	2.4	2	2.6	-	-	4	1.3
210-219	1	1.2	-	-	-	-	-	-	1	0.3
220-229	2	2.4	1	1.2	-	-	-	-	3	0.9
230-239	-	-	2	2.4	-	-	-	-	2	0.6
4 hrs *	1	1.2	2	2.4	4	5.2	3	3.8	10	3.1
5 hrs	1	1.2	3	3.7	1	1.3	1	1.2	6	1.9
6 hrs	1	1.2	1	1.2	1	1.3	1	1.2	4	1.3
7 hrs	-	-	-	-	-	-	1	1.2	1	0.3
8 hrs	-	-	1	1.2	-	-	1	1.2	2	0.6
9 hrs	-	-	-	-	-	-	1	1.2	1	0.3
10 hrs	-	-	-	-	-	-	-	-	-	-
11 hrs	1	1.2	1	1.2	1	1.3	-	-	3	0.9
12 hrs	1	1.2	-	-	1	1.3	2	2.5	4	1.2
13 hrs	-	-	-	-	1	1.3	1	1.3	2	0.6
14 hrs	-	-	2	2.4	-	-	-	-	2	0.6
15 hrs	-	-	-	-	-	-	1	1.3	1	0.3
16 hrs	-	-	-	-	-	-	-	-	-	-
17 hrs	-	-	-	-	-	-	-	-	-	-
18 hrs	-	-	-	-	-	-	-	-	-	-
19 hrs	-	-	1	1.2	-	-	-	-	1	0.3
20 hrs	-	-	-	-	-	-	-	-	-	-
21 hrs	-	-	-	-	-	-	-	-	-	-
22 hrs	-	-	-	-	-	-	-	-	-	-
23 hr	-	-	-	-	-	-	-	-	-	-
Total	83	100.0	82	100.0	77	100.0	80	100.0	322	100.0

* Hourly Intervals measured 00 to 59 minutes inclusive.

Table 14e - TIME SEPARATION (Altitudes Less Than 31,000 Feet): Distribution of Time Intervals Between Successive Flights at the Same Flight Level Crossing Reporting Meridians with Less Than Two-Degrees Latitude Separation in the North Atlantic Region on August 25, 1961

Time Interval (minutes)	20° W		30° W		40° W		50° W		Total	
	#	%	#	%	#	%	#	%	#	%
30- 39	5	10.0	3	6.5	5	11.6	5	11.7	18	9.9
40- 49	3	6.0	1	2.2	2	4.7	5	11.7	11	6.1
50- 59	-	-	2	4.3	2	4.7	1	2.3	5	2.7
60- 69	5	10.0	-	-	1	2.3	1	2.3	7	3.8
70- 79	1	2.0	1	2.2	1	2.3	1	2.3	4	2.2
80- 89	2	4.0	4	8.7	4	9.3	2	4.7	12	6.6
90- 99	1	2.0	1	2.2	-	-	1	2.3	3	1.7
100-109	5	10.0	2	4.3	1	2.3	1	2.3	9	4.9
110-119	-	-	-	-	-	-	1	2.3	1	0.5
120-129	1	2.0	-	-	-	-	2	4.7	3	1.7
130-139	-	-	1	2.2	-	-	1	2.3	2	1.1
140-149	-	-	1	2.2	2	4.7	-	-	3	1.7
150-159	1	2.0	3	6.5	-	-	2	4.7	6	3.3
160-169	-	-	-	-	1	2.3	-	-	1	0.5
170-179	-	-	4	8.7	2	4.7	-	-	6	3.3
180-189	3	6.0	-	-	-	-	1	2.3	4	2.2
190-199	-	-	3	6.5	-	-	1	2.3	4	2.2
200-209	-	-	2	4.3	2	4.7	-	-	4	2.2
210-219	-	-	-	-	-	-	-	-	-	-
220-229	-	-	-	-	1	2.3	-	-	1	0.5
230-239	-	-	-	-	1	2.3	1	2.3	2	1.1
4 hrs *	1	2.0	3	6.5	6	13.9	5	11.6	15	8.2
5 hrs	2	4.0	5	10.9	3	7.0	1	2.3	11	6.1
6 hrs	4	8.0	2	4.3	1	2.3	2	4.7	9	4.9
7 hrs	1	2.0	-	-	1	2.3	1	2.3	3	1.7
8 hrs	-	-	-	-	-	-	1	2.3	1	0.5
9 hrs	5	10.0	1	2.2	2	4.7	-	-	8	4.4
10 hrs	1	2.0	-	-	1	2.3	3	7.0	5	2.7
11 hrs	-	-	1	2.2	2	4.7	-	-	3	1.7
12 hrs	-	-	-	-	1	2.3	-	-	1	0.5
13 hrs	-	-	1	2.2	1	2.3	1	2.3	3	1.7
14 hrs	-	-	-	-	-	-	-	-	-	-
15 hrs	1	2.0	-	-	-	-	-	-	1	0.5
16 hrs	1	2.0	3	6.5	-	-	3	7.0	7	3.8
17 hrs	3	6.0	-	-	-	-	-	-	3	1.7
18 hrs	2	4.0	1	2.2	-	-	-	-	3	1.7
19 hrs	-	-	-	-	-	-	-	-	-	-
20 hrs	-	-	-	-	-	-	-	-	-	-
21 hrs	2	4.0	1	2.2	-	-	-	-	3	1.7
22 hrs	-	-	-	-	-	-	-	-	-	-
23 hrs	-	-	-	-	-	-	-	-	-	-
Total	50	100.0	46	100.0	43	100.0	43	100.0	182	100.0

* Hourly Intervals measured 00 to 59 minutes inclusive.

Figure 11a - FLIGHT SEPARATION: Distribution of Reporting Times and Fix Latitudes for Flights Crossing the 20° W Meridian at the 33,000 Feet Flight Level in the North Atlantic Region on August 25, 1961 (Eastbound → ; Westbound ←)

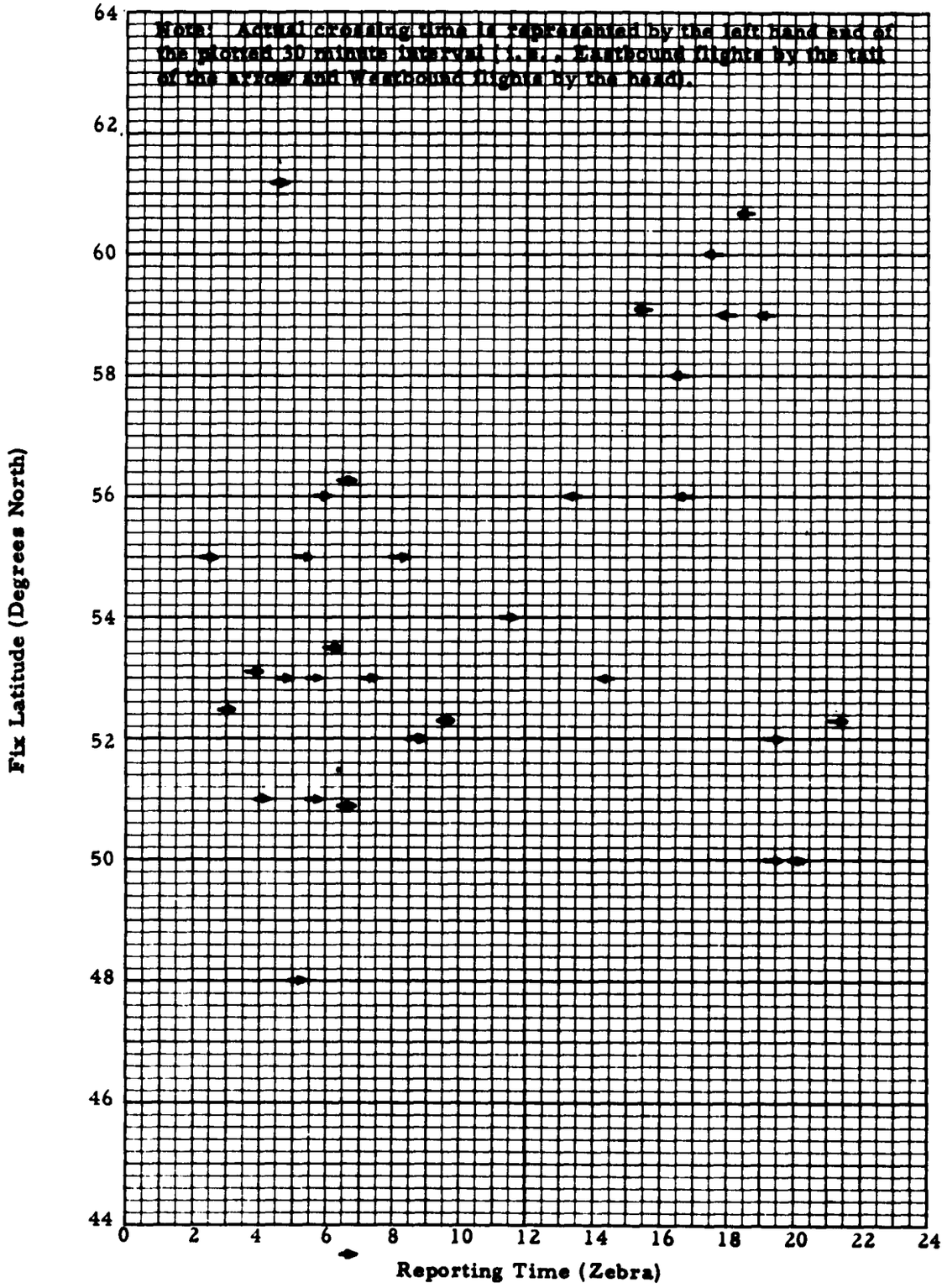


Figure 11b -FLIGHT SEPARATION: Distribution of Reporting Times and Fix Latitudes for Flights Crossing the 30° W Meridian at the 33,000 Feet Flight Level in the North Atlantic Region on August 25, 1961 (Eastbound → ; Westbound ←)

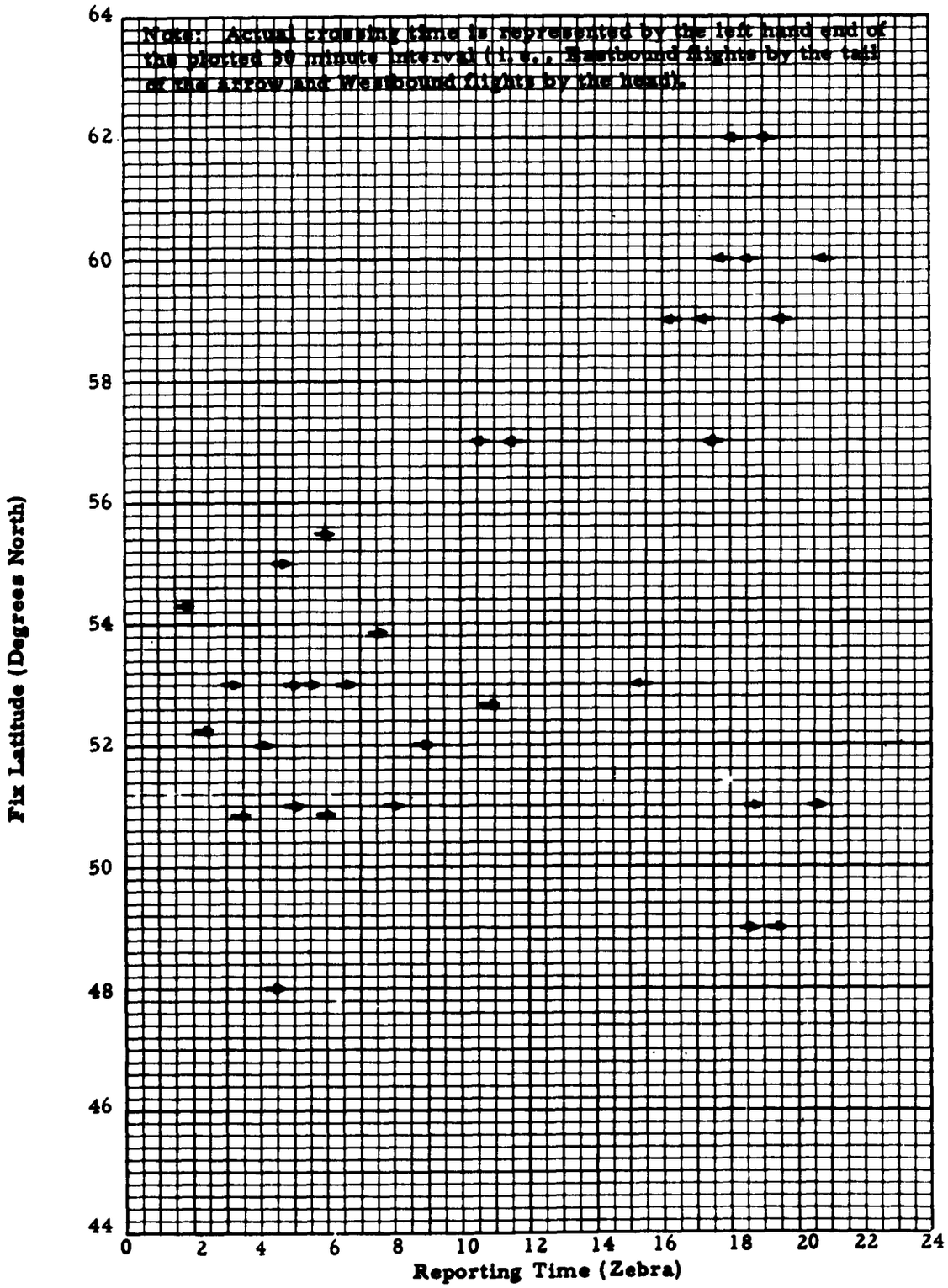


Figure 11c - FLIGHT SEPARATION: Distribution of Reporting Times and Fix Latitudes for Flights Crossing the 40° W Meridian at the 33,000 Feet Flight Level in the North Atlantic Region on August 25, 1961 (Eastbound →; Westbound ←)

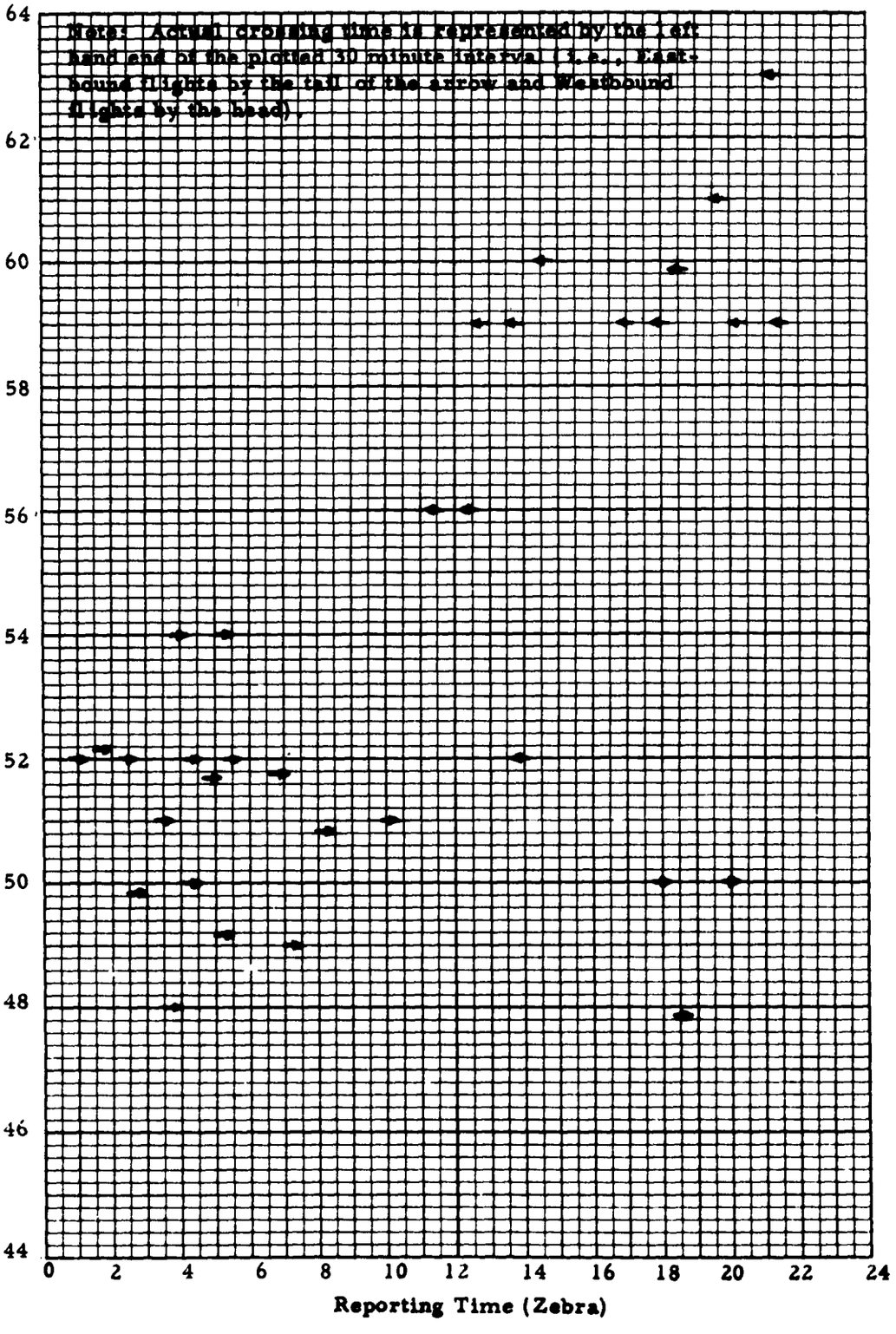
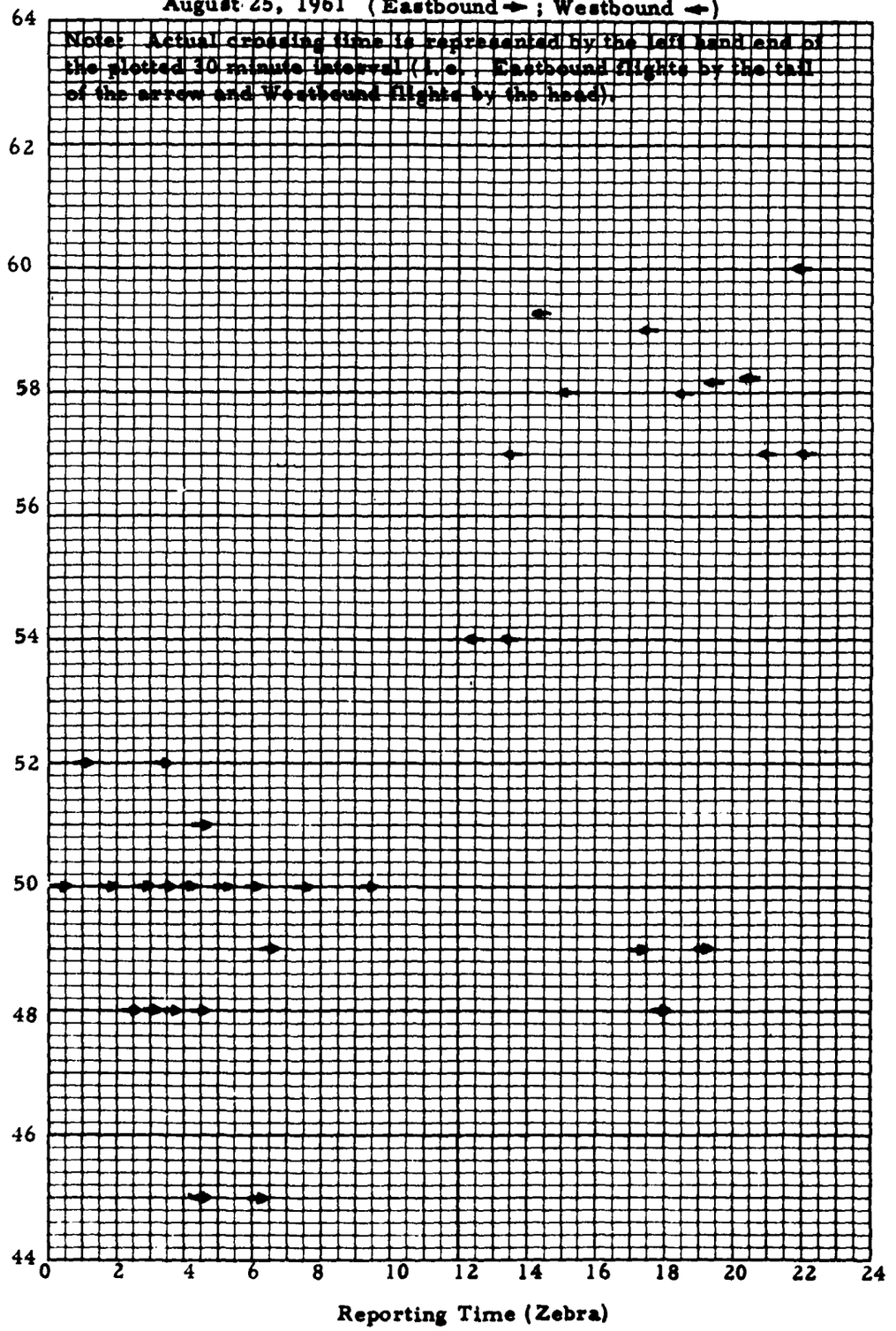


Figure 11d -FLIGHT SEPARATION: Distribution of Reporting Times and Fix Latitudes for Flights Crossing the 50° W Meridian at the 33,000 Feet Flight Level in the North Atlantic Region on August 25, 1961 (Eastbound ➔ ; Westbound ➔)



APPENDIX A: DATA PROCESSING

This appendix includes the flight data worksheet and IBM card format for the North Atlantic Region Traffic Survey Data included in this report. Original Data Collection Forms GPO 905192 (see Figure 2, page 3) were filled out in accordance with "Instructions and Alpha-Numeric Codes for North Atlantic Region Traffic Survey Data Recording Form" prepared by Analysis Branch, Bureau of Air Traffic Management, Washington, D. C.

An IBM card is prepared for each leg of a flight. A leg is the portion of flight between two successive reporting fixes. A worksheet, Figure 12, is completed for each flight. Entries in card columns 1 thru 37 are identical for all legs of a flight. Entries in card columns 38 thru 76 are made for each leg within a flight. The total number of legs (IBM Cards) for each flight is recorded in card columns 41 and 42; the sequence of flight legs is recorded in card columns 43 and 44. When the IBM cards are punched each card contains information in card columns 1 thru 76.

APPENDIX A: Figure 12 - FLIGHT DATA WORKSHEET: IBM Card Format for North Atlantic Region Traffic Survey

Sample No.	Flight			Time of Day	Owner	Country of Ownership	Aircraft		Flight		Direction	Routing Seq.	1st Flt Level Request	Comparison of Alt. Recd	Diff. in Flt Levels
	Ser. No.	Ident. Prefix	Ident. No.				Type	Class	Orig.	Dest.					
1-2	3-5	6-7	8-11	12	13	14-15	16-19	20	21-24	25-28	29	30-32	33-34	35	36-37
XX	XXX	XX	XXXX	X	X	XX	XXXX	X	XXXX	XXXX	X	XXX	XX	X	XX

TAS	No. of Reports	Sequence No.	Enter Center	Reporting Center	Exit Center	1st Fix				2nd Fix				Quality	Altitude Changes
						Lat.	Long.	Time	Alt.	Lat.	Long.	Time	Alt.		
38-40	41-42	43-44	45-46	47-48	49-50	51-54	55-56	57-60	61-62	63-66	67-68	69-72	73-74	75	76
XXX	XX	XX	XX	XX	XX	XXXX	XX	XXXX	XX	XXXX	XX	XXXX	XX	X	X

APPENDIX A: CODE INTERPRETATIONS

Card Column Location	Number of Columns	Field Description	IBM Card Code	Form GPO 905192 Item	Form GPO 905192 Code	Interpretation
1-2	2	Sample Number	01	1		Peak Day Data for July 1961
			02			Peak Day Data for August 1961
			03			Peak Day Data for September 1961
			etc.			(Each month until end of survey)
3-5	3	Flight Serial Number	001			Arbitrary Flight Serial Number assigned by TAB for cross reference and filing use.
			002			
			etc.			
6-7	2	Flight or Aircraft Identification Prefix		3		Military Flights
			MA		MA	Air Force
			MV		MV	Navy
			MR		MR	Army
			XX		XX	(See Civil Flight Identification Prefix Supplement on page 60 of this appendix)
8-11	4	Flight or Aircraft Identification Digits	XXXX	3	XXXX	Last four digits of identification number. If number is less than 4 digits enter zeros to left so that units position is in cc 11.
12	1	Time of Day Duration Code	1			Entire Flight between 0000-2359Z of peak day.
			2			Flight already in North Atlantic Region at 0000Z of peak day.
			3			Flight remains in North Atlantic Region after 2359Z of peak day.

APPENDIX A: Code Interpretations Cont.

Card Column Location	Number of Columns	Field Description	IBM Card Code	Form GPO 905192 Item	Form GPO 905192 Code	Interpretation
13	1	Owner	1	4	1	Scheduled Airline
			2		2	Non-Scheduled Airline
			3		M	Military
			4		4	General Aviation
14-15	2	Country of Ownership	01	5	1	United States of America
			02		2	Canada
			03		3	Italy
			04		4	France
			05		5	Ireland
			06		6	United Kingdom
			07		7	Portugal
			08		8	Iceland
			09		9	Norway
			10		A	Germany
			11		B	Brazil
			12		C	Colombia
			13		D	Argentia
			14		E	Chile
			15		F	Cuba
			16		G	Denmark
			17		H	Guatemala
			18		J	Panama
			19		K	Japan
			20		L	Spain
			21		M	Costa Rica
			22		N	Venezuela
			23		P	Israel

APPENDIX A: Code Interpretations Cont.

Card Column Location	Number of Columns	Field Description	IBM Card Code	Form GPO 905192 Item	Form GPO 905192 Code	Interpretation
			24		Q	Nicaragua
			25		R	Netherlands
			26		S	India
			27		T	Belgium
			28		U	Switzerland
			29		V	Sweden
			30		W	Honduras
			31		X	Australia
			32		Y	USSR
			33		Z	Eqypt
			34			Mexico
			35			Pakistan
			36			Dominican Republic
			37			El Salvador
16-19	4	Aircraft Type	XXXX	6	XXXX	Four letter codes consistent with ATM Manual "Contractions"
20	1	Aircraft Class	1			Piston
			2			Turboprop
			3			Turbojet
21-24	4	Flight Origin	XXXX	25	XXXX	Four letter location identifier from ICAO Doc. 7910
25-28	4	Flight Destination	XXXX	26	XXXX	Same as Flight Origin.

APPENDIX A: Code Interpretations Cont.

Card Column Location	Number of Columns	Field Description	IBM Card Code	Form GPO 905192 Item	Form GPO 905192 Code	Interpretation
29	1	Flight Direction	1			Eastbound
			2			Westbound
			3			Southbound (North America to South America)
			4			Northbound (South America to North America)
			5			Round Robin
30-32	3	Routing Sequence	1XX			Overflys entire North Atlantic Region
			2XX			Takes off within and leaves North Atlantic Region
			3XX			Enters and lands within North Atlantic Region
			4XX			Itinerant Flights Takes off within and lands within North Atlantic Region
			5XX			Round Robin Flights Takes off within and lands within North Atlantic Region
			6XX			Incomplete flight data received
						Note: The units and hundreds position is used to denote specific combinations of centers. This code is listed on a sequence code sheet on page 59.

APPENDIX A: Code Interpretations Cont.

Card Column Location	Number of Columns	Field Description	IBM Card Code	Form GPO 905192 Item	Form GPO 905192 Code	Interpretation
33-34	2	First Flight Level Request	XX	27	XX	Flight level in thousands of feet. Altitudes up to 9,000 feet will be prefixed with a zero. OT means "On Top"
35	1	Altitude Comparison	1 2 3			Assigned Level Equal to First Request Assigned Level less than First Request Assigned Level more than First Request
36-37	2	Altitude Difference	XX			Difference in Flight Levels Between Assigned and Cruise Altitudes. Flight levels have 1,000 feet vertical separation up to and including 29,000 feet. Over 29,000 feet each flight level has 2,000 feet vertical separation.
38-40	3	True Air Speed	XXX	7	XXX	Filed flight plan or enroute TAS in knots.
41-42	2	Number of IBM Cards for Flight	XX			The number of IBM cards (flight legs between pairs of fixes) used to describe the flight.
43-44	2	Card Sequence Number	XX			Chronological card sequence number for flight legs.

APPENDIX A: Code Interpretations Cont.

Card Column Location	Number of Columns	Field Description	IBM Card Code	Form GPO 905192 Item	Code	Interpretation
45-46	2	Adjacent Center at Entrance	01	11	1	New York Oceanic
			02		2	Goose Oceanic
			03		3	Gander Oceanic
			04		4	Bermuda Oceanic
			05		5	Shannon Oceanic
			06		6	Prestwick Oceanic
			07		7	Santa Maria Oceanic
			08		8	Reykavik Oceanic
			09		9	Stavanger
			10		H	Bodo Oceanic
			11		J	Sondrestron Oceanic
			12		Z	Thule Oceanic
			13		A	Casablanca
			14		B	Lisbon Fir
			15		C	Madrid
			16		D	Paris
			17		E	London Fir
			18		F	Shannon Fir
			19		G	Scottish Fir
			20		K	Goose Fir
			21		L	Cander Fir
			22		M	Moncton Fir
			23		N	Boston ARTCC
			24		P	New York ARTCC
			25		Q	Norfolk ARTCC
			26		R	Jacksonville ARTCC
			27		S	Miami ARTCC
			28		T	Miami Oceanic
			29		U	San Juan CTA

APPENDIX A: Code Interpretations Cont.

Card Column Location	Number of Columns	Field Description	IBM Card Code	Form GPO 905192 Item	Form GPO 905192 Code	Interpretation
45-46 Cont.			30		V	San Juan Fir
			31		W	Bodo Fir
			32		X	Trondheim Fir
			33		Y	Stavanger Fir
			34			Elsewhere Area
			35			NORD Fir
			56			Shannon/Prestwick Oceanic Center
47-48	2	Reporting Center	XX	2	X	Same as Adjacent Center at Entrance above.
49-50	2	Adjacent Center at Exit	XX	24	X	Same as Adjacent Center at Entrance above.
51-54	2	First Fix Latitude	XXXX	8, 12 15, 18 & 21		North Latitude in degrees (Card Column 51-52), and minutes (Card Column 53-54) for first fix of pair.
55-56	2	First Fix Longitude	XX	8, 12, 15, 18 & 21		West Longitude in degrees for first fix of pair. East Longitudes are indicated by a numeric eleven overpunch in units position.
57-60	4	First Fix Time (GMT)	XXXX	9, 13, 16, 19 & 22		Time in hours (Card Column 57-58) and minutes (Card Column 59-60)

APPENDIX A: Code Interpretations Cont.

Card Column Location	Number of Columns	Field Description	IBM Card Code	For, GPO 905192 Item	For, GPO 905192 Code	Interpretation
61-62	2	First Fix Flight level	XX	10,14, 17,20 & 23		Flight level in thousands of feet. Altitudes up to 9,000 feet will be prefixed with a zero. OT means "On Top"
63-66	4	Second Fix Latitude	XXXX	8,12, 15,18 & 21		Same as First Fix Latitude
67-68	2	Second Fix Longitude	XX	8,12, 15,18 & 21		Same as First Fix Longitude
69-72	2	Second Fix Time (GMT)	XXXX	9,13, 16,19 & 21		Same as First Fix Time
73-74	2	Second Fix Flight level	XX	10,14 17,20 & 23		Same as First Fix Flight Level
75	1	Quality of Data	1			Transcribed Directly from Recording Center Form.

APPENDIX A: Code Interpretations Cont.

Card Column Location	Number of Columns	Field Description	IBM Card Code	Form GPO 905192 Item	Form GPO 905192 Code	Interpretation
75 cont.			2			Recording Center Entry missing from Data Form; transcribed directly from adjacent center data form.
			3			Recording Center Entry missing from Data Form; data estimated.
			4			Recording Center Data Form Missing; data estimated.
			5			Reporting Center Data Form missing; transcribed directly from adjacent center form.
76	1	Altitude Change	0			No change
			1			Climb between 1st & 2nd fix.
			2			Descent between 1st & 2nd fix.

IBM CARD CODE

Card Column 31-32 Code	Sequence of Oceanic Centers 1st	2nd	3rd	4th
01	01			
02	01	03		
03	01	03	56	
*77	01	03	56	07
04	01	03	07	
05	01	03	08	
06	01	04		
07	01	07		
08	02			
09	02	03		
10	02	03	56	
11	02	03	07	
12	02	03	08	
13	02	11		
14	02	11	08	
*76	02	11	08	56
15	02	11	08	09
16	02	11	08	12
*82	02	11	12	
*89	02	12		
17	03			
18	03	01		
19	03	01	04	
20	03	02		
21	03	02	11	
22	03	56		
23	03	07		
*92	03	07	56	
24	03	08		
25	03	08	09	
*80	03	11	08	
26	04			
27	04	01		
28	04	01	03	
29	04	01	03	56
30	04	01	07	
31	04	01	07	56
32	56			
33	56	03		
34	56	03	01	
35	56	03	01	04
36	56	03	02	
*86	56	03	11	02
37	56	07		
38	56	07	01	
39	56	07	01	04
40	56	08		
*87	56	08	03	
*81	56	08	03	02
41	56	08	11	02
42	56	08	11	
*79	56	11		
*78	56	11	03	
43	07			
44	07	01		
45	07	01	04	
46	07	03		
*85	07	03	01	
47	07	03	02	
*84	07	56		
*88	07	56	03	01
48	08			
*93	08	02		
49	08	03		
50	08	03	01	
51	08	03	02	
52	08	56		
53	08	09		
54	08	11		
55	08	11	02	
*83	08	11	02	03
56	08	12		
57	09			
58	09	08		
59	09	08	03	
60	09	08	11	
61	09	08	11	02
62	09	08	12	
63	09	10		
64	09	10	12	
65	10			
*94	10	08		
*91	10	09		
66	11			
67	11	02		
68	11	08		
69	11	08	56	
70	11	08	09	
71	12			
*90	12	02		
72	12	08		
73	12	08	56	
74	12	11		
75	12	11	08	
76	02	11	08	56
77	01	03	56	07
78	56	11	03	
79	56	11		
80	03	11	08	
81	56	08	03	02
82	02	11	12	
83	08	11	02	03
84	07	56		
85	07	03	01	
86	56	03	11	02
87	56	08	03	
88	07	56	03	01
89	02	12		
90	12	02		
91	10	09		
92	03	07	56	
93	08	02		
94	10	08		

* These entries inserted in oceanic center sequences; they appear in code sequence at end of listing.

APPENDIX A: Civil Flight Identification Prefix

Part I - Alphabetical by Code

Code	Owner
AA	American Airlines, Inc. (USA)
AB	Empresa de Transportes, Aerovias Brasil, S.A. (Brazil)
AC	Aerovias Nacionales de Colombia, S.A. AVIANCA (Colombia)
AF	Air France (France)
AG	Guest Aerovias Mexico, S.A. (Mexico)
AI	Air India Airlines (India)
AK	Alaska Coastal Airlines (USA)
AM	Aeronaves de Mexico, S.A. (Mexico)
AR	Aerolineas Argentia FAMA (Argentina)
AS	Alaska Airlines, Inc. (USA)
AW	Airwork Limited (U.K.)
AZ	Alitalia-Linee Aeree Italiane (Italy)
BA	British Overseas Airways Corp. BOAC (U.K.)
BN	Braniff International Airways, Inc. (USA)
BW	British West Indian Airways, Ltd. BWIA (U.K.)
CA	Capital Airlines, Inc. (USA)
CB	Caribbean Atlantic Airlines, Inc. (USA)
CC	Lloyd Aerreo Colombiana (Colombia)
CF	General Aviation (Canada)
CH	California Hawaiian (Non-Scheduled) (USA)
CI	Cinta Chilean Airlines (Chile)
CO	Continental Air Lines, Inc. (USA)
CP	Canadian Pacific Airlines, Ltd. CPAL (Canada)
CU	Compania Cubana de Aviacion, S. A. (Cuba)
CZ	Cuba Aeropostal, S.A. (Cuba)
DL	Delta Air Lines, Inc. (USA)
DO	Compania Dominicana de Aviacion, S.A. CDA (Dominican Republic)
EA	Eastern Air Lines, Inc. (USA)
EG	Eagle Airways of Britain (U.K.)
EM	Quantas Empire Airways (Australia)
ES	Ellis Air Lines (USA)
FI	Flugfelag Islands (Iceland)
FT	Flying Tiger Airlines (USA)

APPENDIX A: Part I (continued)

Code	Owner
GL	Great Lakes (Non Scheduled) (USA)
GU	Empress Guatemalteca de Aviacion AVIATECA (Guatemala)
HP	Aerovias Panama (Panama)
IB	Iberta Lineas Aereas de Espana, S.A. (Spain)
IN	Aerlinte Eireann Tta (Ireland)
IU	Inter Continental Airlines (USA)
JL	Japan Airlines Co., Ltd. (Japan)
KL	KLM Royal Dutch Airlines (Netherlands)
LA	Lines Aerea Nacional de Chiles LAN (Chile)
LH	Deutsche Lufthansa Aktiengesellschaft (Germany)
LL	Loftleidir H.F. - Icelandic Airlines (Iceland)
LM	Lineas Aereas Mexicanas, S.A. (Mexico)
LR	Lineas Aereas Costaricenses, S.A. LASCA (Costa Rica)
LV	Linea Aeropostal Venezolana LAV (Venezuela)
LY	El Al Israel Airlines, Ltd. (Israel)
MA	Military, Air Force (USA)
MC	Maritime Central Airways (Canada)
ME	Mackey Airlines, Inc. (USA)
MR	Military, Army (USA)
MV	Military, Navy (USA)
MX	Compania Mexicana de Aviacion, S.A. CMA (Mexico)
NA	National Airlines, Inc. (USA)
NC	Northern Consolidated Airlines, Inc. (USA)
NE	Northeast Airlines, Inc. (USA)
NI	Lineas Aereas de Nicarague, S.A. (Nicaragua)
NO	North Central Airlines, Inc. (USA)
NN	Non-Scheduled (USA)
NW	Northwest Airlines, Inc. (USA)
NX	General Aviation (USA)
ON	Overseas National (USA)

APPENDIX A: Part I (continued)

Code	Owner
PA	Pan American World Airways System (USA)
PC	Pacific Airlines, Inc. (USA)
PG	Pan American-Grance Airways, Inc. (USA)
PK	Pakistan Int. Airlines (Pakistan)
PN	Pacific Northern Airlines, Inc. (USA)
PR	President Airlines, Inc. (USA)
PW	Pacific Western Airlines, Ltd. (Canada)
QA	Aerovias "Q", SA (Cuba)
RD	Riddle Airlines (USA)
RG	Empresa de Viacao Aerea Rio Grandense VARIG (Brazil)
RN	Rutas Aereas Nacionales, S.A. RANSA (Venezuela)
RV	Reeve Aleutian Airways, Inc. (USA)
SB	Seaboard and Western Airlines (USA)
SK	Scandinavian Airlines System SAS (Scandinavia)
SN	Societe Anonyme Belge d'Exploitation de la Navigation Aerienne SABENA (Belgium)
SR	Swiss Air Transport Co., Ltd. (Switzerland)
SU	Aeroflot (USSR)
TA	TACA International Airlines, S.A. (El Salvador)
TC	Trans-Canada Air Lines TCA (Canada)
TN	Trans-Atlantic (Non-Scheduled)
TO	Transcontinental S.A. de Transportes (Argentia)
TP	Transportes Aereos (Portugal)
TR	Trans Caribbean Airways (USA)
TW	Trans World Airlines, Inc. (USA)
TX	Transportes Aereos Nacionales, S.A. TAN (Honduras)
TZ	Aero Transportes, S.A. ATSA (Mexico)
UA	United Air Lines, Inc. (USA)
UR	Uraba Medellin and Central Airways, Inc. (USA)
US	United States Overseas Airlines, Inc.
VE	Aerovias Venezolanas, S.A. AVENSA (Venezuela)
WA	Western Air Lines, Inc. (USA)
WE	Wien Alaska Airlines (USA)

APPENDIX A:

Part II - Alphabetical by Owner

Owner	Code
Aerlinte Eireann Tta (Ireland)	IN
Aero Transportes, S.A. ATSA (Mexico)	TZ
Aeroflot (USSR)	SU
Aerolineas Argentina FAMA (Argentina)	AR
Aeronaves de Mexico, S.A. (Mexico)	AM
Aerovias Nacionales de Colombia, S.A. AVIANCA (Colomiia)	AC
Aerovias Panama (Panama)	HP
Aerovias "Q", S.A. (Cuba)	QA
Aerovias Venezolanas, S.A., AVENSA (Venezuela)	VE
Air France (France)	AF
Air India Airlines (India)	AI
Airwork Limited (U.K.)	AW
Alaska Airlines, Inc. (USA)	AS
Alaska Coastal Airlines (USA)	AK
Alitalia-Linee Aeree Italiane (Italy)	AZ
American Airlines, Inc. (USA)	AA
Braniff International Airways, Inc. (USA)	BN
British Overseas Airways Corp. BOAC (U.K.)	BA
British West Indian Airways, Ltd. BWIA (U.K.)	BW
California Hawaiian (Non-Scheduled) (USA)	CH
Canadian Pacific Airlines, Ltd. (Canada)	CP
Capital Airlines, Inc. (USA)	CA
Caribbean Atlantic Airlines, Inc. (USA)	CB
Cinta Chilean Airlines (Chile)	CI
Lloyd Aerreo Colombiana (Colombia)	CC
Compania Cubana de Aviacion, S.A. (Cuba)	CU
Compania Dominicana de Aviacion S.A. CDA (Dominican Republic)	DO
Compania Mexicana de Aviacion, S.A. CMA (Mexico)	MX
Continental Air Lines, Inc. (USA)	CO
Cuba Aeropostal, S.A. (Cuba)	CZ
Delta Air Lines, Inc. (USA)	DL
Deutsche Lufthansa Aktiengesellschaft (Germany)	LH

APPENDIX A: Part II (continued)

Owner	Code
Eagle Airways of Britain (U.K.)	EG
Eastern Air Lines, Inc. (USA)	EA
El Al Israel Airlines, Ltd. (Israel)	LY
Empresa de Transportes, Aerovias Brasil, S.A. (Brazil)	AB
Empresa de Viacao Aerea Rio Grandense VARIG (Brazil)	RG
Empress Guatemalteca de Aviacion AVIATECA (Guatemala)	GU
Ellis Air Lines (USA)	ES
Flying Tiger Lines (USA)	FT
Flugfelag Islands (Iceland)	FI
General Aviation	CF
General Aviation (USA)	NX
Great Lakes (Non-Scheduled)(USA)	GL
Guest Aerovias Mexico, S.A. (Mexico)	AG
Iberta Lineas Aereas de Espana, S.A. (Spain)	IB
Inter Continental Airlines (USA)	IU
Japan Airlines Co., Ltd. (Japan)	JL
KLM Royal Dutch Airlines (Netherlands)	KL
Linea Aeropostal Venezolana LAV (Venezuela)	LV
Lineas Aereas Costaricenses, S.A. LASCA (Costa Rica)	LR
Lineas Aereas Mexicanas, S.A. (Mexico)	LM
Lineas Aereas de Nicarague, S.A. (Nicaragua)	NI
Lines Aerea Nacional de Chiles LAN (Chile)	LA
Loftleidir H.F., Ocelandic Airlines (Iceland)	LL
Mackey Airlines, Inc. (USA)	ME
Maritime Central Airways (Canada)	MC
Military, Air Force	MA
Military, Army	MR
Military, Navy	MV
National Airlines, Inc. (USA)	NA
Non Scheduled (USA)	NN
North Central Airlines, Inc. (USA)	NO
Northeast Airlines, Inc. (USA)	NE
Northern Consolidated Airlines, Inc. (USA)	NC
Northwest Airlines, Inc. (USA)	NW

APPENDIX A: Part II (continued)

Owner	Code
Overseas National (USA)	ON
Pacific Airlines, Inc. (USA)	PC
Pacific Northern Airlines, Inc. (USA)	PN
Pacific Western Airlines, Ltd. (Canada)	PW
Pakistan Int. Airlines (Pakistan)	PK
Pan American-Grance Airways, Inc. (USA)	PG
Pan American World Airways System (USA)	PA
President Airlines, Inc. (USA)	PR
Quantas Empire Airways (Australia)	EM
Reeve Aleutian Airways, Inc. (USA)	RV
Riddle Airlines (USA)	RD
Rutas Aereas Nacionales, S.A. RANSA (Venezuela)	RN
Seaboard and Western Airlines (USA)	SB
Scandinavian Airlines System SAS (Scandinavia)	SK
Societe Anonyme Belge d'Exploitation de la Navigation Aerienne SABENA (Belgium)	SN
Swiss Air Transport Co., Ltd. (Switzerland)	SR
TACA International Airlines, S.A. (El Salvador)	TA
Trans-Atlantic (Non-Scheduled) (USA)	TN
Trans-Canada Air Lines TCA (Canada)	TC
Trans Caribbean Airways (USA)	TR
Transcontinental S.A. de Transportes (Argentia)	TO
Transportes Aereas Portuguese, S.A.R.L. (Portugal)	TP
Transportes Aeros Nacionales, S.A. TAN (Honduras)	TX
Trans World Airlines, Inc. (USA)	TW
United Air Lines, Inc. (USA)	UA
Uraba Medellin and Central Airways, Inc. (USA)	UR
United States Overseas Airlines, Inc.	US
Western Air Lines, Inc. (USA)	WA
Wien Alaska Airlines (USA)	WE